

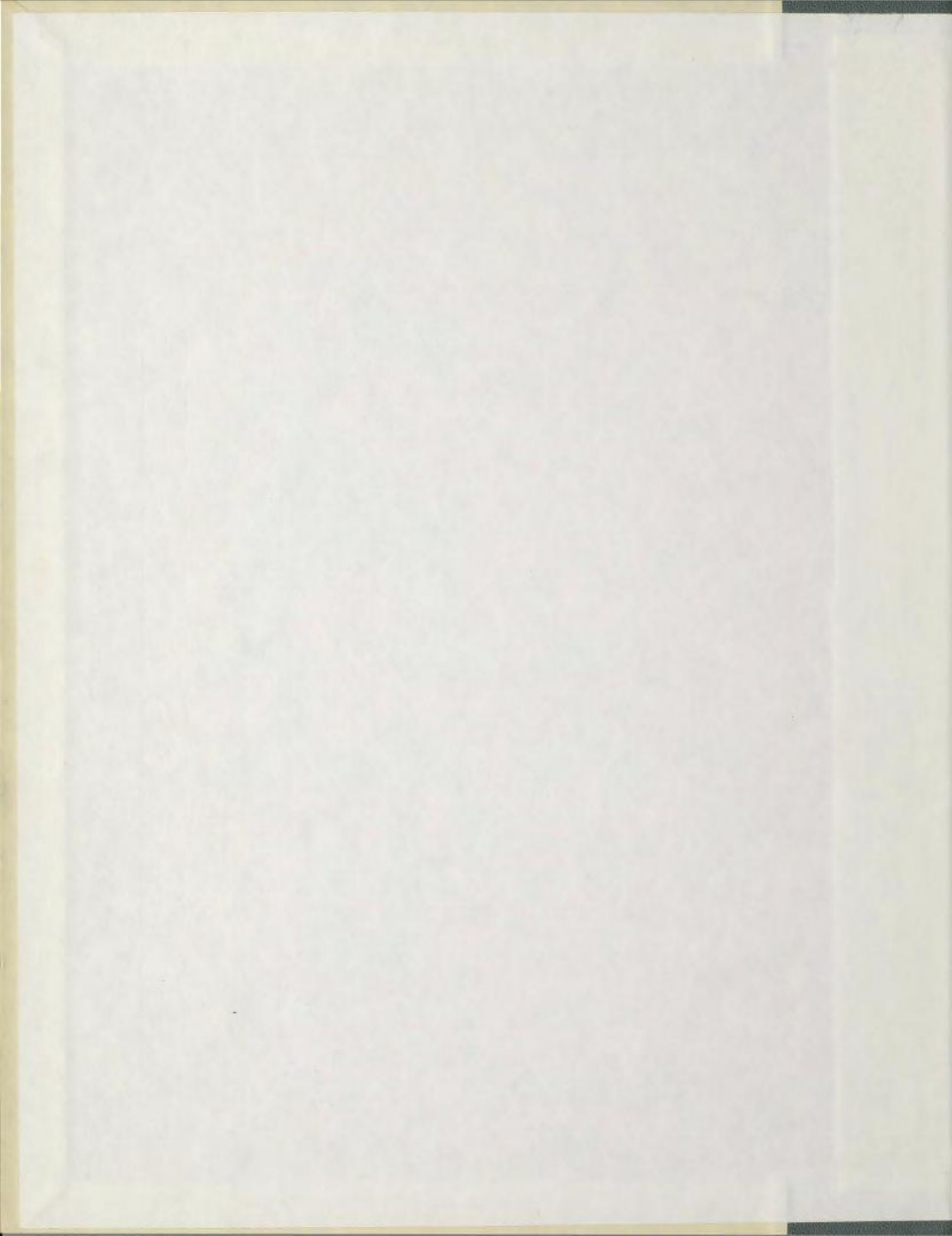
THE EFFECT OF GROUP VOCATIONAL GUIDANCE ON THE
CERTAINTY, SATISFACTION, AND REALISM OF VOCATIONAL CHOICES
MADE BY GRADE ELEVEN STUDENTS

CENTRE FOR NEWFOUNDLAND STUDIES

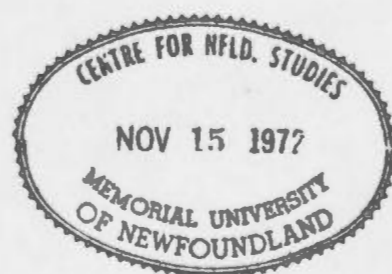
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MARCIA OLIVE LOUISE DUNN



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THE EFFECT OF GROUP VOCATIONAL GUIDANCE ON THE CERTAINTY,
SATISFACTION, AND REALISM OF VOCATIONAL CHOICES
MADE BY GRADE ELEVEN STUDENTS

by



MARCIA OLIVE LOUISE DUNN

A THESIS SUBMITTED TO THE FACULTY OF EDUCATION
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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GUIDANCE AND COUNSELLING

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ABSTRACT

The purpose of this study was to investigate the effect of a group vocational guidance program on the certainty, satisfaction and realism of vocational choices made by grade eleven students.

The guidance program was carried out in the grade eleven classes in one Newfoundland high school. Grade eleven students in another school in the same community and in a third school in a similar community were used as a comparison or control group. The guidance program consisted of a variety of activities designed to increase the students' self-knowledge and occupational information. The objectives of the program were to increase the levels of certainty, satisfaction, and realism of the vocational choices made by the students.

A random sample of the experimental group and of the control group was administered a questionnaire prior to the introduction of the group vocational guidance program. The purpose of this particular administration of the questionnaire was to determine the comparability of the two groups on the three criteria and to assess the levels of these criteria at the beginning of the treatment period. At the end of this period the same questionnaire was completed by all students in both groups. It was then possible to ascertain the extent to which each group had changed on the three variables over the six-month period. A two-way analysis of variance, followed by application of Duncan's New Multiple Range Test, was carried out on the data related to the main hypotheses of the study.

It was found that of those students who changed their choices over the treatment period, only those in the experimental group made significant increases in certainty and satisfaction, while the control group made a significant increase in the level of realism.

It was also found that, of the students who did not change their choices from pre-test to post-test, only those of the experimental group whose choices were judged to be unrealistic showed any significant increases in certainty and satisfaction. The hypothesized change for these students had been in the opposite direction.

It is suggested that further research be carried out to determine the effectiveness of vocational guidance at different levels of pupil development. It is also suggested that a study be conducted to determine which factors are most likely to influence students to make realistic choices. The effect of students being aware of the objectives of a group vocational guidance program is another area considered to be worth studying. Finally, it is suggested that the effects of individual counseling in addition to group vocational guidance should be compared with the effects of group guidance without individual counseling.

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Sincere gratitude is expressed to Mr. Walter Dawe for his participation in the study and to the students, teachers, and principals for their cooperation. Special thanks to Miss Mary Long, Miss Paula Gillard, and Mr. Glen Sheppard for their help. Special thanks also to my husband Eric whose support and encouragement made this thesis possible.

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Chapter 1

INTRODUCTION

Vocational guidance has been and continues to be an integral part of high school guidance programs in North America. Wide variations exist in the approaches and techniques employed in helping young people choose careers. Individual counseling, small group counseling, and larger group guidance programs have all been used, the choice of program usually depending on the availability of counselor time and on the personal preference of counselors. There has been a great variety in the services provided, ranging from the mere provision of vocational information to intensive individual counseling.

In general, guidance programs have been concerned with such vocational behaviours as indecision, realism, consistency, certainty, range and specificity of vocational choice, and satisfaction with vocational choice. Often, however, the aims and objectives of guidance programs have not been clearly delineated; vocational guidance has been emphasized, not because a particular goal has been established, but "because it seemed like a good idea."¹ Furthermore, in the majority of cases no attempt has been made to evaluate a particular program to find out what the results were. In spite of this, vocational guidance continues to be strongly emphasized, often at the expense of other aspects of school guid-

1. Robert Hoppock, Occupational Information (New York: McGraw-Hill Book Company, Inc., 1967), p. 379.

ance programs. Such emphasis can only be justified if continuous and critical analysis of the guidance process and its expected outcomes is carried out, and only then if results are positive.

THE PROBLEM

Statement of the Problem

It is the purpose of this study to investigate the effect of a group vocational guidance program on the certainty, satisfaction, and realism of vocational choices made by grade eleven students in a selected Newfoundland high school.

Background and Significance of the Study

The success or failure of any vocational guidance program may depend on many factors: the developmental level of the student, the interest and ability of the student, the competence of the counselor, the appropriateness and accuracy of occupational materials provided, the objectives set out, the procedures and techniques used. Different studies have considered certain of these factors; because the results have been conflicting, further research is necessary.

One of the questions relating to vocational guidance which appears to have been resolved to some degree by previous studies is related to the effectiveness of group and individual procedures. The findings of Hoyt² were that group counseling is as effective

2. Donald P. Hoyt, "An Evaluation of Group and Individual Programs in Vocational Guidance," Journal of Applied Psychology, 39: 26-30, 1955.

as individual counseling as far as help with vocational planning is concerned. Similar findings were obtained by Hewer,³ Hansen,⁴ and Bilobsky, et al.⁵ In the light of these findings on the effectiveness of group counseling, it would appear that a group approach would be more appropriate in Newfoundland, especially since there are insufficient qualified counselors to deal with students on an individual basis.

Another question of concern to guidance workers is the stage of pupil development at which vocational guidance and counseling is most effective. It is the opinion of Wellman that:

Vocational counseling . . . may take place at any time during, or periodically throughout, the process from preadolescence to the later years of vocational productivity. But, the time in the process at which it takes place is an all important consideration in determining the appropriateness of vocational procedures and techniques. The development or maturity level of the individual, and the environmental opportunities and limitations at any given point in the vocational development process, are among the variables which bear most directly upon the vocational counseling procedures and techniques.⁶

No studies which might provide an answer to the question of the most appropriate time to give vocational guidance have been found, and writers do not appear to agree on this point. Daws, for

3. Vivian H. Hewer, "Group Counseling, Individual Counseling and a College Class in Vocations," The Personnel and Guidance Journal, 37: 660-665, 1958.

4. J. T. Hansen, "The Effects of Two Types of Counseling on the Realism of Vocational Choice of High School Boys," Unpublished Doctoral Dissertation, University of Colorado, 1967.

5. David Bilovsky, William McMaster, Joseph E. Shorr, and Stanley L. Singer, "Individual and Group Counseling," The Personnel and Guidance Journal, 31: 363-365, 1963.

6. Frank E. Wellman, "Vocational Counseling of Adolescents: A Critical Look," Chronicle Guidance, SE June: 1-7, 1962.

example, suggests that:

Vocational guidance provided at the end of schooling comes too late, partly because other contingent and nonprofessional sources have already influenced young people's career thinking and preferences and partly because, having virtually completed his educational programme, the school leaver's occupational opportunities are now relatively limited and fixed. . . . Since occupational choice is the outcome of a developmental process that has extended over many years, vocational guidance can⁷ be effective only if it, too, is spread over those same years.

Super, too, believes that vocational development through the life stages can be guided; he contends that eleventh hour vocational guidance should be regarded as "crisis counseling".⁸ The opposite point of view is taken by Hoppock. He asserts that:

The student who graduates from high school and goes immediately to work is more likely to act on his most recent occupational choice than on the choice he made two or three years before.⁹

The time to teach about occupations, Hoppock suggests, is just before or at the time that large enough numbers of persons will need and want the same kinds of occupational information, specifically during the last term before completing their full-time schooling.

This study seeks to determine whether or not a "last minute" attempt to help students with career planning is indeed helpful. It is felt that such an investigation is especially necessary in Newfoundland, where guidance services are limited and the provision of help with career planning has often, of necessity, been restricted

7. Peter P. Daws, "What Will the School Counselor Do?" Educational Research, 9: 83-92, 1966.

8. Donald E. Super, The Psychology of Careers (New York: Harper & Row, 1957), p. 316.

9. Hoppock, op. cit., p. 172.

to grade eleven students. For this reason, the program under study here was presented to all grade eleven students in a Newfoundland high school.

A major problem to be considered in judging the effectiveness of a vocational guidance program is the establishment of suitable criteria by which the program can be evaluated. Certainty, satisfaction and realism of choice were selected as the criteria for this study, following the example set by Hoyt¹⁰ and Hewer¹¹.

Many high school seniors experience some degree of uncertainty about the vocational choices they make. Because they are in their final year in high school, they are constantly being questioned about their career plans. Parents, teachers, and friends all exert pressure on them to make a choice which will determine their plans for the year immediately following graduation. Some young people feel insecure if they have not been able to make a vocational decision, especially if the majority of their friends have already done so. Consequently, they may state a choice, inwardly feeling very uncertain that they will actually take steps to enter that particular occupation. This uncertainty often leads to frustration and anxiety. It would appear that one of the ways vocational guidance can be of help to young people is to assist them to choose a career closely related to their interest, values, and expectations. Such a career needs to be within the range of their ability and, therefore, one upon which they can feel reasonably certain they can embark.

10. Hoyt, loc. cit.

11. Hewer, loc. cit.

Satisfaction with choice was chosen as a criterion in this study because it was decided that the happiness and emotional well-being of an individual depend to a large extent on the degree to which he is implementing his self-concept and satisfying his basic needs. Career choices made by many students are the results of many influences. Often they are the choices of parents rather than of the students themselves; in some instances a particular career may be a family tradition which a student may feel obligated to carry on. There are situations, too, when financial or other family problems prevent a student from following the career he most desires; there is a wide gap between his plans and his aspirations. The student who is dissatisfied with his choice of occupation is unhappy and unmotivated. Furthermore, if he is dissatisfied with his choice of occupation, he is more likely to be dissatisfied with the occupation itself, if and when he enters it. Vocational guidance should, it seems, help the student adjust himself to the inevitable factors restricting his choice or to find ways to alter that choice so that his plans are more congruent with his aspirations.

Finally, realism of choice was considered to be a worthwhile objective of a guidance program because of its importance not only to the individual but to society as a whole. As long as students are aiming for occupations in which they would not be making optimum use of their abilities, we are faced with a loss of potential manpower. In such instances, the student himself remains unfulfilled and his abilities are underdeveloped. On the other hand, students who are aiming for occupations beyond their ability are obviously, yet needlessly, heading for difficulties in obtaining the required

training for the jobs they have chosen or in performing the occupational tasks. To permit students to pursue an occupational choice that does not make the wisest and fullest use of their abilities, interests, values and resources is to condone the waste of man's potential. If vocational guidance is to be totally effective, it must strive, as one of its primary objectives, to help students make choices that are realistic in the light of the student's qualities and with all due consideration of the opportunities available in the work world.

Certainty, satisfaction, and realism of choice are only a few of the many dimensions of vocational development which may be facilitated by vocational guidance. There is little research to indicate that any of these factors should be the ultimate goal of guidance or counseling. Shoben, in his discussion of the effectiveness of guidance programs, suggests that "until the operational criteria used in specific studies are related to the realities of the client's actual world, their meaningfulness remains moot and controversial."¹² It is felt that certainty, satisfaction, and realism of vocational choice are specific goals, related to the immediate vocational and psychological needs of the student, and to a great extent related to the realities of the student's actual world.

The significance of this study lies in the results which may be obtained from systematically helping grade eleven students to become aware of factors which should be considered when making

12. E. J. Shoben, Jr., "Some Problems in Establishing Criteria of Effectiveness," The Personnel and Guidance Journal, 31: 289-291, 1953.

vocational plans for the years immediately following graduation from high school. Specifically, this study seeks to determine to what extent such a program of group vocational guidance affects the certainty, satisfaction and realism of students' vocational choices and thereby to determine whether it is justifiable for school counselors and administrators to place emphasis on such a program.

HYPOTHESES

Hypothesis 1 Participation in group vocational guidance will result in more changes of expressed choice than non-participation in group vocational guidance.

The chief concern of this study is with the effect that group vocational guidance will have on the certainty, satisfaction and realism of choices made by students. Thus, hypotheses 2, 3, and 4 are the main hypotheses of this study:

Hypotheses 2a For students who participate in group vocational guidance and who subsequently change their choices, the post-test choices will be (i) more realistic, (ii) more satisfactory, and (iii) made with greater certainty.

2b For students who do not participate in group vocational guidance and who change their choices, the post-test choices will show no significant differences in (i) realism, (ii) satisfaction, and (iii) certainty.

Hypotheses 3a For students with choices judged realistic, who participate in group vocational guidance but do not change their choices, the post-test choices will be (i) more satisfactory and (ii) made with greater certainty.

3b For students with choices judged realistic, who do not participate in group vocational guidance and do not change their choices, the post-test choices will show no significant differences in (i) satisfaction and (ii) certainty.

- Hypotheses 4a For students with choices judged unrealistic, who participate in group vocational guidance but do not change their choices, the post-test choices will be (i) less satisfactory and (ii) made with less certainty.
- 4b For students with choices judged unrealistic, who do not participate in group vocational guidance and do not change their choices, the post-test choices will show no significant differences in (i) satisfaction and (ii) certainty.

Since a random sample of students was not used in this study, it was necessary to use a control group that was similar to the experimental group in as many ways as possible. As a statistical check on this assumption, the following hypothesis was made:

- Hypothesis 5 There will be no significant difference, as assessed by the pre-test, between the experimental group (High School #1) and the control group (High Schools #2 and #3) in the levels of (i) realism, (ii) satisfaction, and (iii) certainty.

It was also assumed that the pre-test itself would not affect the characteristics of choice being measured. As a statistical check on this assumption, the following hypothesis was made:

- Hypothesis 6 There will be no significant differences, as assessed by the post-test, in levels of (i) realism, (ii) satisfaction, and (iii) certainty (a) between the subjects of the experimental group who were exposed to the pre-test and those who were not, and (b) between the subjects of the control group who were exposed to the pre-test and those who were not.

DEFINITIONS

For purposes of this study, the following definitions were adopted:

Vocational Choice. Vocational choice is defined as the occupation which a subject expresses an intention to enter. Choice of occupation is measured by an open-ended question, specifically Question 11 of the attached questionnaire. (See Appendix B.)

Group Vocational Guidance. The following activities are included in the group vocational guidance program offered:

1. Analysis of the individual:

- (a) Kuder Preference Record - Form C (Vocational), administered and interpreted on a group basis.
- (b) General Aptitude Test Battery, administered on a group basis and interpreted on the basis of choices expressed by the students.
- (c) Lorge-Thorndike Intelligence Tests (Verbal and Non-verbal batteries), administered on a group basis and interpreted individually in such cases where the counselor or student concerned felt it necessary.
- (d) Discussion of academic record, work experience, hobbies, and extra-curricular activities.

2. Occupational information to provide students with some knowledge of the occupational, industrial and labor structure of the country, classifications of occupations, occupational requirements, entrance procedures, training opportunities and employment outlook. This information was

provided by means of the following:

- (a) Science Research Associates occupational file. To this was added further information on local, provincial, and federal occupations.
 - (b) Films (as listed in Appendix C).
 - (c) Filmstrips (as listed in Appendix D).
 - (d) Books (as listed in Appendix E).
 - (e) Tapes (as listed in Appendix F).
 - (f) Guest speakers (as listed in Appendix G).
 - (g) Information centre - University calendars, etc.
3. Class discussions on the following topics:
- (a) How to use the Dictionary of Occupational Titles and occupational information files.
 - (b) Applying for jobs; writing letters to inquire about jobs and to accept job offers.
 - (c) How to study.
 - (d) Jobs available in home town (following occupational survey of town).
 - (e) Choosing universities and training institutions.
 - (f) Scholarships and financial assistance.
 - (g) "Standing on your own feet"; making your own decisions.

The objectives of this group vocational guidance program were to increase the levels of realism, satisfaction, and certainty of vocational choice. The groups, of regular classroom size, met once weekly over a period of six months.

Realism. A student's choice of vocation is considered by judges to be realistic if it is appropriate in terms of his specific aptitudes, measured interests, verbal and non-verbal intelligence, academic record throughout high school, and other background information such as hobbies, extra-curricular activities, part-time jobs, and knowledge of the job requirements of the career he has chosen. A person's choice would be classified as realistic if chances appeared to be high that he could successfully complete the required training and successfully perform the occupational tasks.

Satisfaction. Satisfaction with choice is defined as contentment and pleasure regarding the vocation chosen. It is measured by the subject's self-rating on a 5-point scale. (See Item 21 of questionnaire.)

Certainty. Certainty of choice is defined as assurance that a particular occupational choice is definite and not expected to change within the near future. It is measured by the subject's self-rating on a 5-point scale. (See Item 20 of questionnaire.)

Intelligence. Intelligence is defined as the subject's derived scores on the verbal and non-verbal batteries of the Lorge-Thorndike Intelligence Test, Level 5. Both batteries of this test are designed to measure abstract intelligence, defined by the authors as "the ability to work with ideas and the relationships among ideas."

Interest. Interest, as measured by the Kuder Preference Record - Form C (Vocational), is the degree to which a subject

expresses preferences for the type of duties involved in the ten broad areas measured by the Kuder.

Aptitude. Aptitude, as measured by the General Aptitude Test Battery, is defined as behaviour which facilitates the learning of a task. The aptitudes measured by Parts I - VII of the General Aptitude Test Battery are: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, and clerical perception.

Academic Achievement. Academic achievement is defined as the degree of mastery of high school courses as indicated by marks received in final examinations in Grades IX and X, and at mid-term in Grade XI.

DESIGN OF THE STUDY

Data used in this study were obtained from the grade eleven students in a Newfoundland high school who participated in a group vocational guidance program and from students in two other Newfoundland high schools where no organized vocational guidance programs existed. Information was obtained from half the students in a pre-test administered in November, 1970, and from all the students in the post-test administered in May, 1971, on such factors as present occupational choice, knowledge of the occupation chosen, extra-curricular activities, hobbies, and part-time jobs. High school academic record was obtained from the students' cumulative records. Following the pre-test, the experimental group was exposed to a 6-month group vocational guidance program. During

this time they were administered intelligence tests, aptitude tests, and an interest inventory. These same tests were administered to subjects in the control group following the post-test. Data obtained from these tests and from the questionnaire were used by the three independent judges in rating the realism of the subjects' vocational choices. Certainty of choice and satisfaction with choice were rated by the subjects on the questionnaire. A statistical analysis of variance was conducted to determine changes in realism, certainty, and satisfaction factors.

OVERVIEW

Chapter 2 will be devoted to a review of related literature. Chapter 3 will contain an outline of the procedures followed in conducting the study and will describe the methods of collecting and analyzing the data. Chapter 4 will consist of a report of the findings of this investigation. The final chapter will give a summary of the findings, together with some recommendation and suggestions for further research.

Chapter 2

SOME RELATED LITERATURE

In the review of literature pertaining to the importance of vocational guidance in the career planning of high school students, three areas were investigated and are discussed here: (1) theories of vocational choice, (2) reasons for vocational guidance, and (3) effectiveness of vocational guidance programs.

THEORIES OF VOCATIONAL CHOICE

Any attempt to give vocational guidance implies some theory of vocational choice or development. It is on such a theory that one bases his expectations about the way in which vocational plans are made. As Hoppock points out:

Counseling implies a belief that decisions are influenced by what the counselor says or does, or by what happens to the client in the counseling relationship. The use of vocational aptitude tests and interest inventories implies a belief that decisions are influenced by the information which these instruments may contribute to the client's knowledge of himself. The provision of occupational information implies a belief that decisions are influenced by what the client knows about occupations.¹

One of the early attempts to formulate a theory of vocational choice was that of Ginzberg and his associates. They contend that:

1. Occupational choice is a process rather than an event.

1. Robert Hoppock, Occupational Information (New York: McGraw-Hill Book Company, Inc., 1967), p. 84.

2. The process is irreversible in most instances.

3. Occupational choice takes place over three distinguishable periods of time: fantasy (up to about age 10), tentative (about ages 11 to 18), and realistic (about age 18 up).² On the basis of Ginzberg's stages, high school seniors would appear to be in the tentative stage. Yet, they might also be considered as being at the beginning of the realistic period, for they are at the stage when decisions must be made for the years immediately following high school. Ginzberg suggests that:

As most individuals reach the end of this (tentative) period, they recognize that their approach has been too subjective. They, therefore, consider their choices tentative, for they realize that an effective resolution requires the incorporation of reality considerations and this will be possible only on the basis of additional experience. During the realistic period, the translation is so heavily weighted by reality considerations that a synthesis is difficult. The individual recognizes that he must work out a compromise between what he wants and the opportunities which are available to him.³

There are, of course, other factors which may create a difficult synthesis, for example, the individual's inability to complete the training for the job he is interested in, or his inability to perform satisfactorily the occupational tasks.

Super, like Ginzberg, considers choice to be a process rather than an event. He says that "the term (choice) should denote a whole series of choices, generally resulting in the elimination of some alternatives and the retention of others, until in

2. Eli Ginzberg, S. W. Ginsburg, S. Axelrad, and J. L. Herma, Occupational Choice: An Approach to a General Theory (New York: Columbia University Press, 1951), pp. 185-190.

3. Eli Ginzberg, The Development of Human Resources (New York: Harper & Row, 1957), p. 71.

due course the narrowing down process results in what might perhaps be called an occupational choice." He proposes five vocational life stages: growth, exploration, establishment, maintenance, and decline.⁴ The exploration period is probably the period high school counselors are concerned with, for it is then the adolescent explores his potentialities through school and part-time work.

Tiedman also believes that patterns of career development are discernible at different ages, but in relation to different problems in the evolution of a career. He contends that students need to be taught how to use educational and vocational information when making career decisions. He sees the primary goal of this instruction as being the "assumption of responsibility during choice in vocational decisions." The counselor must make the student aware of his process of decision making in educational and vocational realms.⁵

REASONS FOR VOCATIONAL GUIDANCE

There is general agreement among writers that a counselor can often help a person to make a better choice than he would without help. In Manpower and Education, published in 1956 by the Educational Policies Commission of the United States, the following opinion is expressed:

4. Donald E. Super, The Psychology of Careers (New York: Harper & Row, 1957), p. 71.

5. D. V. Tiedman, Career Pattern Studies: Current Findings with Possibilities, Harvard Studies in Career Development, No. 40 (Cambridge: Graduate School of Education, Harvard University, 1965).

Where an individual has the responsibility and freedom for making vocational decisions . . . he needs information on which to base the choice. Many factors converge to determine what is, for him, the wise vocational path. Some of these factors are known to him. He knows of necessity something about himself, though rarely does he know himself adequately. His experience has given him some insight into the vocational universe, but the insight gained by his own experience under modern conditions is almost certain to be fragmentary, limited and inadequate.

The individual needs help in identifying those factors which should affect his decisions and plans for a career and in reacting to them constructively. Vocational guidance can give this help.

Wellman is of the opinion that vocational guidance is "a facilitator to more efficient and effective, individual, vocational development."⁶ Daws is more specific in his reasons for vocational guidance. He says that:

Vocational guidance offers help to understand the full range of occupations that are accessible, the demands they make upon the learning and performance capacities of the young worker, and what they have to offer him, both in the short and the long term, in return for his labour. Guidance also provides help in thinking through the problem of choice and help in settling to the demands of a strange environment when working life begins.⁷

A similar stand is taken by Hoppock:

When a person knows enough about an occupation to be familiar with all the duties and activities that the occupation involves, he will often avoid choosing that occupation if it is one for which he is least fitted, and he will lean toward it if it is one of these occupations for which he has more appropriate aptitudes.⁸

Hoppock further suggests that unwise choices are often made by individuals who are ignorant of themselves or have inadequate know-

6. Frank E. Wellman, "Vocational Counseling of Adolescents: A Critical Look," Chronicle Guidance (SE June, 1962), p. 2.

7. Peter P. Daws, "What Will the School Counselor Do?" Educational Research, 9: 83-92, 1966.

8. Hoppock, op. cit. p. 109.

ledge of the occupations they choose. The suggestion is made by Beilin that a basis for realistic counseling can be provided by the determination of the occupational structure of the community. The assumption he makes is that students who have knowledge of the types of job opportunities actually available will make more realistic occupational choices.⁹

O'Hara, who believes that career development is a learning process, suggests that:

If we do not provide the student with some kind of occupational and career information, the full range of possible responses will not be open to him. He will be a vocationally deprived child. Guidance counselors must intervene in the habitual perception of the vocational world in order to broaden that perception, to open up the number of options available, and to make each option clear, distinct, and patterned in accordance with the unique interests, abilities, and values of the student.

O'Hara further suggests that we teach the student to make increasingly more adequate vocational differentiations and integrations; the result, he contends, will be more adequate vocational responses.¹⁰

Generally speaking, then, the aim of vocational guidance is to make young people more aware of the opportunities available to them and to choose wisely from among the alternatives. Vocational guidance is expected to produce students who can make more realistic

9. Harry Beilin, "The Community Occupational Survey and Studies of Occupational Choice," Personnel and Guidance Journal, 31: 455-456, 1953.

10. Robert P. O'Hara, "A Theoretical Foundation for the Use of Occupational Information in Guidance," Personnel and Guidance Journal, 46: 636-640, 1968.

decisions. The student himself often seeks help in overcoming his difficulties in choice-making and his uncertainties about the choices he makes. Furthermore, he wants help in choosing a career in which he can gain the maximum amount of satisfaction out of his working life and make as much use as possible of his interests and capacities.

The preceding paragraph suggests three possible objectives of a vocational guidance program, namely, realism of vocational choice, certainty of choice, and satisfaction with choice. Whether or not any of these should be the ultimate goal of counseling is a question not yet completely answered by theory or research. Indeed, these three particular dimensions of vocational development may be considered as being intermediate rather than ultimate goals, and the weakness of using intermediate criteria in evaluating guidance and counseling must be considered. As Hoppock points out:

One of the ultimate aims of counseling is to help people find their way into jobs in which they think they will be reasonably successful and reasonably satisfied. We think that they will be more likely to reach this objective if they are well informed about occupational opportunities and requirements. Hence we teach facts about jobs, and the acquisition of such facts becomes an intermediate objective on the way to the ultimate objective. . . . The use of intermediate criteria does not necessarily invalidate an evaluation, but it does make the experiment dependent upon the truth or falsity of the assumed relationship between the intermediate criterion and the ultimate objective.¹¹

The majority of studies evaluating counseling effectiveness do assume intermediate criteria as desirable goals of counseling.

11. Hoppock, op. cit., pp. 392-393.

Submitting, therefore, to any reservations about the use of intermediate criteria, many investigators in the field of vocational guidance and counseling feel there is a great deal of justification in testing the hypothesis that vocational guidance is effective in facilitating the development of students along one or more of the dimensions of vocational development.

Realism of Choice as a Criterion

Realism of choice has been used in several studies; in most of these it has been considered to be a valid criterion for evaluating guidance and counseling. Hoyt¹² used realism as one of the four criteria in his evaluation of a group program in vocational guidance. These objectives were set out by a committee of the University of Minnesota Student Counseling Bureau counselors who helped Hoyt plan and carry out the study.

Hewer, in a follow-up study designed to determine the long-range effects of vocational counseling, concluded that "realism of vocational choice is a meaningful goal for vocational counseling and a suitable criterion for judging its effectiveness."¹³

Gonyea, on the other hand, has expressed certain reservations about the use of "appropriateness-of-vocational-choice" as a criterion. It is his opinion that:

Although changes in vocational plans as a result of counseling appeared to be reflected in subsequent vocational development up to one year later, nevertheless such a criterion does not appear to be a valid measure of enduring meaningful

12. Hoyt, op. cit., p.26.

13. Hewer, op. cit., p. 665.

effects of vocational counseling, and the assumption that such effects occur at all remain undemonstrated.¹⁴

Hansen, in his discussion of realism as a criterion, suggests that, although it has reservations, there seems to be a precedent for using it.¹⁵

Certainty of Choice as a Criterion

In dealing with students in their final year of high school, it is inevitable that one will find many students who are unable to make a definite decision about their future vocation. On this point, McCall states:

Perhaps we have been stressing the decision too much and not stressing enough the perception and evaluation of the alternatives and where they lead, in addition to knowing where he wants to go and where others have gone before him. Only an adult can supply these answers.¹⁶

But what many adults, especially parents, are doing is exerting pressure on young people to make a choice before the time passes when application should be made for specific post-high school training programs or for entry into the employment field.

Among the three problems of vocational choice involving indecision which Crites suggests, is that of the uninterested individual who has made a single choice but is uncertain about it. "He is attracted to his chosen occupation, but at the same time is

14. George G. Gonyea, "Appropriateness-of-Vocational-Choice as a Criterion of Counseling Outcome," Journal of Counseling Psychology, 9: 213-219, 1962.

15. J. T. Hansen, "The Effects of Two Types of Counseling on the Realism of Vocational Choice of High School Boys," Unpublished Doctoral Dissertation, University of Colorado, 1967.

16. John R. McCall, "Adolescent Development and the Decision-Making Process," in Counseling the Adolescent, by Alexander Schneider and Contributors (San Francisco: Chandler Publishing Co., 1969), p. 303.

repelled by it."¹⁷ It appears, then, that one objective of vocational guidance should be to help students, not only to make a choice, but to make one that he is interested in, one that he can state with greater certainty. The difficulties inherent in reaching this goal are many. For example, any individual may be qualified, by virtue of his abilities, interests and personality, for a number of occupations. To help an individual determine which occupations are appropriate for him may be insufficient. He may have great difficulty choosing from among these or, having chosen, may still not be certain he has made the best choice in the long run.

Hershenson and Roth suggest that the certainty of a choice increases as the range of choice narrows. "First, the range of possibilities available to him is narrowed. Second, these possibilities which remain are strengthened. Eventually, through the process of successively narrowing alternatives and strengthening the remaining ones, the individual arrives at his career choice."¹⁸ It would appear that one of the ways vocational guidance can be most effective is by providing assistance to the student in the narrowing of choices so that they can overcome their uncertainty. This involves, of course, consideration of the many factors relating to indecision and uncertainty. Tyler has proposed four such factors:

17. John O. Crites, Vocational Psychology (New York: McGraw-Hill Book Co., 1969), p. 303

18. D. B. Hershenson and R. M. Roth, "A Decisional Process Method of Vocational Development," Journal of Counseling Psychology, 13: 368-370, 1966.

1. Influences emanating from family and friends.
2. Aspects of the occupational role one plays.
3. Equipotentiality.
4. Limitations imposed by circumstances.¹⁹

Such factors as these inevitably lead to uncertainty in the decision making process. Even when a student has been guided toward making a realistic vocational choice, it is also of great importance that the emotive effects of such a decision be considered. For an individual to know that a particular occupation is appropriate in terms of his abilities and interests but is incongruent with one or more of the factors referred to above can result in conflict within the individual. He cannot be completely certain that he will indeed enter the occupation he has tentatively chosen. This would be Williamson's definition of an uncertain choice: a choice has been made but the individual has doubts about it.²⁰ He cites as an example the student who seeks confirmation of his decision making from an authority figure, such as an instructor or counselor.

The vocational counselor is faced with two problems: the problem of helping the individual who has made a realistic choice but is somewhat uncertain of that choice, and the problem of helping the individual who has made an apparently unrealistic choice and is confident that he will be able to enter the occupation he has chosen. The same or similar factors may be operating in each of

19. Leona E. Tyler, The Work of the Counselor (New York: Appleton-Century-Crofts, 1961), p.

20. E. G. Williamson, Counseling Adolescents (New York: McGraw-Hill Book Company, Inc., 1950), pp. 428, 406.

these situations. What vocational guidance should do for the student is help him make a realistic choice about which he has a minimum degree of uncertainty. The psychological well-being of many individuals depends on their ability to make the right decision at the right time; indecision and uncertainty in such persons can only lead to frustration and anxiety.

Satisfaction with Choice as a Criterion

Zytowski suggests that "if an occupation is chosen, it must be that it is chosen in the expectation of achieving a satisfactory state of affairs; . . . to implement a self-concept must be satisfying; to find a work environment which complements one's personality must also be to find gratification, however sublimated, of some fundamental need or drive."²¹ To say that one is satisfied with one's choice of occupation obviously carries the implication that one expects to be satisfied with that job. If one sees a congruence between one's interests and one's chosen career, one is more likely to be satisfied with the choice made. As Ginzberg points out:

The decision concerning an occupational choice is, in the last analysis, a compromise whereby an individual hopes to gain the maximum degree of satisfaction out of his working life by pursuing a career in which he can make as much use as possible of his interests and capacities, in a situation which will satisfy as many of his values and goals as possible. In seeking an appropriate choice, he must weigh the actual opportunities and limitations and the extent to which they will contribute to or detract from maximum work satisfaction.²²

21. Donald G. Zytowski, Vocational Behaviour: Readings in Theory and Research (New York: Holt, Rinehart and Winston, Inc., 1968), p. 399.

22. Ginzberg, op. cit., p. 56.

EFFECTIVENESS OF VOCATIONAL GUIDANCE PROGRAMS

Several studies have been made of the effectiveness of vocational guidance or counseling programs, five of which have been selected for discussion here as being most pertinent to the present study. In one of these, Bilovsky et al.²³ investigated the effect of vocational counseling on the realism of choices made by high school students. He found that those who participated in a group vocational guidance program made just as realistic choices as did those who had individual counseling. However, no control group was used and hence no conclusions can be drawn about the effectiveness (or otherwise) of either method of counseling.

A similar study by Hansen²⁴ showed that group counseling with high school boys aspiring to occupations beyond their capacities does result in marked improvement in realism, while there was no significant improvement as a result of individual counseling with such "overshooters". Neither group counseling nor individual counseling with "undershooters" produced any change in realism.

An intensive vocational counseling program for slow learners in high school was studied by Lurie et al.²⁵ The subjects were tenth-grade boys and girls, and the study was conducted over a two-year period. As a result of the group and individual counseling

23. David Bilovsky, William McMaster, Joseph E. Shorr, and Stanley L. Singer, "Individual and Group Counseling," Personnel and Guidance Journal, 31: 363-365, 1963.

24. Hansen, op. cit., p. 67.

25. W. A. Lurie, J. Goldfein, and R. Baxt, "An Intensive Vocational Counseling Program for Slow Learners in High School," Personnel and Guidance Journal, 40: 21-29, 1960.

services, the experimental group achieved greater realism and maturity in vocational planning than did the control group. In addition, their responses showed that they differed from the control group in having more grasp of the need for giving thought to their choice of career, greater awareness of the factors which enter into career choice, greater understanding of the nature of the work responsibilities, and greater knowledge of occupations.

Hoyt²⁶ investigated the effectiveness of a group method in vocational guidance on the certainty, satisfaction and realism of choices made by freshman males who were undecided on a career. He compared the effectiveness of group counseling with that of individual counseling, using a control group. He found that both the group method and the individual method of counseling produced positive changes in the certainty, satisfaction and realism of choice. Of more importance is his finding that group procedures were as effective as the more traditional approach of individual counseling. Hoyt concluded that "in view of the amount of time required for the group approach, this research would seem to be a strong endorsement for group programs in vocational guidance."

Hewer²⁷ conducted a similar study following Hoyt's model but without a control group. The criteria for judging the effectiveness of counseling were certainty of choice, satisfaction with choice, and realism of choice. Her results indicated that there were no significant differences in the effect that group counseling produced on the certainty of and satisfaction with vocational choice

26. Hoyt, op. cit., p. 30.

27. Hewer, op. cit., p. 665.

among students, as compared to that of individual counseling. No final conclusions could be drawn about the effectiveness of either method of counseling on the realism of choices students made, due to lack of interjudge reliability. Her study had one further weakness, the lack of a control group, which precludes the forming of any conclusions about the effectiveness of the two types of counseling.

SUMMARY

Writers agree that the individual needs information about himself and the world of work if he is to make adequate vocational responses. The aim of vocational guidance, therefore, is to give young people this kind of information. Vocational guidance must make them aware of the opportunities available to them and help them to choose wisely from among the alternatives. Of the several dimensions of vocational development, realism of choice, certainty of choice, and satisfaction with choice appear to be desirable goals of vocational guidance programs for high school seniors.

Studies have shown that group counseling is as effective as individual counseling in helping young people achieve greater realism, certainty, and satisfaction in the choice of a vocation. Unfortunately, some studies conducted in this area have not used a control group and it has, therefore, been impossible to make any final conclusions about the effectiveness of different methods of counseling.

Chapter 3

DESIGN OF THE STUDY

This chapter describes the procedures followed in carrying out the study. Separate sections discuss the background of the study, population and sample used, data collection and treatment procedures, instrumentation, administration and scoring of tests, and treatment of data.

BACKGROUND OF THE STUDY

This study was carried out in three high schools in two Newfoundland communities selected because of the similarity of their size, location, socioeconomic and cultural levels, and the religious affiliation of the members of the communities.¹ The experimental group was composed of the Grade XI students in one of these schools, selected for study because of the availability of a vocational guidance worker in that school. This group of students participated in a group vocational guidance program for a period of six months, from November, 1970, to May, 1971. The Grade XI students in the other two schools were used as a comparison or control group.

POPULATION AND SAMPLE

The sample of the study consisted of grade eleven students attending high schools at Lewisporte and Clarenville. At Lewisporte Integrated High School, the school selected as the experimental

1. 1961 Census of Canada (Ottawa: Queen's Printer, 1961), Vol. II, Part 1, Tables 1, 51; Vol. III, Part 1, Table 14; Vol. III, Part 3, Tables 5, 13.

setting, the Grade XI population totalled 76. Of these, eight students were not present during all the testing sessions and were excluded from the study. Thus, the experimental group consisted of 68 students.

The control group was made up of the total population of the Grade XI classes at Lewisporte Pentecostal High School and Clarendville Integrated High School, with the exception of one of the classes at Clarendville which was involved in another experimental project. Of the 64 students enrolled in the remaining two classes at Clarendville, eight were excluded from the study because they were not present during all the testing sessions. For the same reason, six of the 35 students enrolled at Lewisporte Pentecostal High School were excluded. The total sample in the control group was 85 students.

The schools from which the control group was drawn had no organized vocational guidance program. They did, of course, make available a limited amount of information concerning entrance requirements to universities, vocational schools and the like; however, no effort was made in these schools to provide materials relating to unusual or highly specific occupations. Students in these schools had the same opportunities as did members of the experimental group to discuss vocational plans with principals, teachers, parents, and friends. It was realized by the investigator that these variables could not be controlled. However, the principals of the schools from which the control group was drawn did agree that no interest inventories or aptitude tests would be administered during the treatment period, thus controlling the effect

that such testing would have on the students' thinking about careers. In these schools, too, no special programs were planned to give students help with choosing occupations.

PROCEDURE

In October, 1970, permission to conduct the study was obtained from the principals of the schools. The investigator then met with the guidance worker in the experimental school to discuss the objectives and methods of the proposed vocational guidance program.

Pre-test

One of the basic assumptions of this study was that any initial differences between the two groups were insignificant. To determine the truth or falsity of this assumption, a pre-test was administered on November 15, prior to the introduction of the group vocational guidance program. (See Questionnaire in Appendix B.) Students were not told the purpose of the questionnaire other than that by completing it they would be assisting the investigator in her research. Nevertheless, since it was possible that the administration of the pre-test would have an effect on the career thinking of the participants, it was considered advisable that the extent of such effect, if any, should be determined. Consequently, both the experimental group and the control group were randomly subdivided into two groups, only one of which received the pre-test. Stratification on the basis of class (level) and sex was employed in this randomization procedure.

This administration of the questionnaire enabled the investigator to establish the initial vocational choices of these students and the levels of certainty, satisfaction and realism of these choices.

Group Vocational Guidance Program

From approximately November 15 to May 15 the group vocational guidance program was carried out, the guidance worker spending one 50-minute period per week with each class. In general, the activities engaged in during these periods dealt with job-exploration and self-analysis. A detailed outline of these activities is given in Chapter 1, page 8, and in Appendices C, D, E, F, and G. The objectives set out for this program were to help students attain optimum levels of realism, satisfaction, and certainty of vocational choice.

As part of the program, the investigator administered the Kuder Preference Record - Form C (Vocational) and the General Aptitude Test Battery (Parts I - VII) in February. The results of these tests were then interpreted to the students by either the investigator or the guidance worker. The Lorge-Thorndike Intelligence Test (Verbal and Non-verbal Batteries) was also administered to the students in February. Results were then made available to the guidance worker who used them with certain individuals in discussing their career plans.

Post-test

At the end of the 6-month period of group vocational guidance, that is, on or near May 15, all students in both the experi-

mental group and the control group were asked to complete the same questionnaire previously administered as a pre-test. Again, this gave the investigator the vocational choices of the students, and the levels of certainty, satisfaction and realism of these choices.

Experimental Design

The overall design of the experiment is shown in Table 1.

Figure 1

Experimental Design

| Group | November 15 | Nov. 15 - May 15 | May 15 | After May 15 |
|-------|-------------|---------------------------|-----------|-----------------------------|
| | Pre-test | Group vocational guidance | Post-test | |
| (A) | R - - - - - | | | |
| | | Group vocational guidance | Post-test | |
| | Pre-test | | Post-test | Interest and aptitude tests |
| (B) | R - - - - - | | | |
| | | | Post-test | Interest and aptitude tests |

Other Data

After the subjects in the control group had completed the post-test, they were administered the Kuder Preference Record - Form C (Vocational), the General Aptitude Test Battery (Parts I - VII) and the Lorge-Thorndike Intelligence Test (Verbal and Non-verbal Batteries). Results of these tests, along with other data, were

used by the judges to assess the realism of the choices these students had made.

High school academic records of all students were obtained from their cumulative records. Included were the final marks the students obtained in Grades IX and X, and the mid-term marks in Grade XI.

Judging of Realism

When the data from the cumulative records and from the administration of the tests and the questionnaire were compiled, a form was devised for presenting the data to the judges for rating. A copy of this form is shown in Appendix H.

A rating scale was then devised for rating the realism of vocational choice. The categories of realism correspond to: 1. VU = Very unrealistic, 2. U = Unrealistic, 3. SU = Somewhat unrealistic, 4. SR = Somewhat realistic, 5. R = Realistic, and 6. VR = Very realistic. In addition, a scale for indicating how certain the judge was of his rating was used. The categories of the certainty rating scale were: 1. VU = Very uncertain, 2. U = Uncertain, 3. SU = Somewhat uncertain, 4. SC = Somewhat certain, 5. C = Certain, and 6. VC = Very certain. When judges were uncertain of their rating, they were asked to indicate the reasons for their uncertainty. It was felt that this information would be helpful in cases where the judges found it difficult to make a decision.

Three judges were used to judge each choice. These judges differed in their level of professional training and types of experience. Judge 1 had several years experience as a high school counselor and was pursuing studies at the doctoral level. Judges 2

and 3 had completed the course work for a Master's degree in guidance and counseling and had begun research for their theses; judge 2 had had several years of high school teaching experience, while judge 3 had only one year of teaching experience.

Written instructions were prepared for the judges; included were definitions of categories on the realism scale, information about the certainty rating scale, the data and the communities. A copy of these instructions is given in Appendix I. The investigator met with the judges individually to further clarify the data and the rating scales, and to rate some sample cases.

Each of the judges independently rated 231 choices, 78 of which were pre-test choices and the remaining 153 were post-test choices. The data sheets for the two groups of students, their pre-test and post-test choices, were arranged in random order; judges did not know which choices were made by a particular group, or whether a choice was made on the pre-test or the post-test.

The mean realism rating for each choice was then computed on the basis of the three ratings. Distribution of the ratings for each group, pre- and post-, is given in Table 1.

Interjudge reliability was then computed and was found to be .81. To compute intrajudge reliability, the correlation coefficient of realism ratings given to each of 12 students was computed for each judge. For these 12 students, all data related to the pre-test choice and to the post-test choice were identical. These data sheets were interspersed throughout the 231 data sheets given to the judges. The judges did not know that their reliability was being checked. The intrajudge reliability was as follows:

Judge 1: .74

Judge 2: .63

Judge 3: .96

Table 1. Distribution of Means of Ratings of Realism

| Mean | Experimental (pre-test) f | Experimental (post-test) f | Control (pre-test) f | Control (post-test) f |
|------|---------------------------------|----------------------------------|----------------------------|-----------------------------|
| 1.00 | | | | |
| 1.33 | | 1 | 1 | |
| 1.67 | | 1 | 1 | |
| 2.00 | | | 1 | 1 |
| 2.33 | 3 | 4 | 5 | 1 |
| 2.67 | | 1 | 2 | 2 |
| 3.00 | 7 | 2 | 5 | 3 |
| 3.33 | 1 | 7 | 2 | 6 |
| 3.67 | 4 | 6 | 8 | 14 |
| 4.00 | 1 | 9 | 3 | 8 |
| 4.33 | 7 | 10 | 5 | 14 |
| 4.67 | 7 | 9 | 8 | 13 |
| 5.00 | 2 | 10 | 3 | 14 |
| 5.33 | 1 | 5 | 1 | 6 |
| 5.67 | 1 | 3 | | 3 |
| 6.00 | | | | |
| | N = 34 | N = 68 | N = 44 | N = 85 |

INSTRUMENTATION

Except for the high school academic record, which was obtained from the pupils' cumulative records, the data presented in this study was obtained by the administration of four test instruments: a questionnaire, and intelligence test, an aptitude

test, and an interest inventory. These instruments are discussed in the following sections.

Questionnaire

The questionnaire was designed to elicit the vocational choices of the students, and such other information as the investigator felt would be helpful in determining the levels of certainty, satisfaction, and realism of these choices. A copy of this questionnaire may be found in Appendix B.

Question 11 was designed to determine the subject's present vocational choice. Questions 12 - 16 were included for the purpose of determining how much information the student had about the necessary training for and the characteristics of the occupation he had chosen. Question 18 was included to give some information on the time the student had made his choice, while Question 19 was designed to determine which person or persons had influenced his choice. Questions 6 - 10 were included to obtain information about the student's extra-curricular activities, hobbies, and work experience. It was felt that information from Questions 6 - 19 would be helpful to the judges in their rating of the realism of the student's choice.

Question 20 enabled the student to give a rating, on a 5-point rating scale, of the level of certainty of his choice. Similarly, Question 21 elicited the student's rating, on a 5-point scale, of the degree to which he was satisfied with the choice he had made. Other questions were included to provide supplementary information.

A rough draft of the questionnaire was thus devised under the supervision of three members of the faculty of education at Memorial University of Newfoundland. The investigator then administered the questionnaire to thirty-five Grade XI students who were not part of the sample. On the basis of this study, the questionnaire was further revised. Some of the questions were restated and, in some of the questions involving checklists, additional alternatives were supplied. The revised questionnaire was further reviewed by members of the faculty before its administration as a pre-test.

Intelligence Test

The Lorge-Thorndike Intelligence Test, Form A, Level 5 was used in this study. The test is composed of a verbal battery and a non-verbal battery, both of which are supposed to measure abstract intelligence, defined by the authors as "the ability to work with ideas and the relationships among ideas."² The verbal battery is made up of five subtests composed of only verbal items: (1) vocabulary, (2) sentence completion, (3) arithmetic reasoning, (4) verbal classification, and (5) verbal analogy. The nonverbal battery is composed of three subtests: (1) pictorial classification, (2) numerical relationships, and (3) pictorial analogy. The ability to perform well on the subtests of the nonverbal battery is not dependent on reading ability.

2. The Lorge-Thorndike Intelligence Tests Technical Manual (Boston: Houghton-Mifflin Company, 1966), p. 1.

The authors state that the tests can be used "to provide an index of general intellectual level for use in estimating the level of job to which the individual may reasonably aspire."³ They suggest that the separate scores on the verbal and nonverbal batteries have some diagnostic significance in vocational guidance. "High scores on the nonverbal battery should indicate likelihood of success in jobs calling for visualizing and thinking in concrete terms. High scores on the verbal battery will indicate probable success in jobs in which language and ideas expressed in words play a large part."⁴

Each battery of the Lorge-Thorndike Intelligence Test provides a derived I. Q.; the average of the derived I. Q.'s from each battery can be used to obtain a composite I. Q. The I. Q.'s have a mean of 100 and a standard deviation of 16. Freeman, in reviewing the test, contends that "it is among the best group tests available, from the point of view of the psychological constructs upon which it is based and that of statistical standardization."⁵

Norming. Norms for the Lorge-Thorndike Intelligence Test are based on United States students from a stratified sample of United States communities stratified on size, median family income, and median education of adults in the community. The standardization

3. The Lorge-Thorndike Intelligence Tests Administrator's Manual (Boston: Houghton-Mifflin Company, 1957), p. 16.

4. Ibid., p. 16.

5. Frank S. Freeman, in The Fifth Mental Measurements Yearbook, ed. Oscar K. Buros (New Jersey: The Gryphon Press, 1960), p. 350.

population consisted of 136,000 children in 44 communities in 22 states. This sample was considered to be a full representation of the United States population of children falling within the tests' age range.

Reliability. The split-half reliability coefficient of the verbal battery has been found to be .92; that of the non-verbal battery is .90. The stability coefficient for the verbal battery, Form 5A, is .87, and for the nonverbal battery, Form 5A, is .72.

Validity. In order to establish the statistical validity of the Lorge-Thorndike Intelligence Tests, studies were conducted to measure their relationship with other criteria such as the Iowa Test of Basic Skills, Stanford Elementary and Stanford Intermediate Achievement Tests, California Achievement Test, Iowa Tests of Educational Development, Iowa Tests of Basic Skills, and Tests of Academic Progress. The correlations between the Lorge-Thorndike Intelligence Tests and (i) the California Mental Maturity is .83, (ii) the Kuhlmann-Anderson is .80, (iii) the Otis is .84. For all these correlations, the Lorge-Thorndike was given in Grade XI and the other group intelligence tests were given not more than three years earlier.

Aptitude Test

Parts I - VII of the General Aptitude Test Battery were used as the aptitude test for this study. These seven subtests measure six aptitudes: (1) G - Intelligence, (2) V - Verbal Aptitude, (3) N - Numerical Aptitude, (4) S - Spatial Aptitude, (5) P - Form Perception, and (6) Q - Clerical Perception.

Occupational norms are shown in terms of a structure consisting of a series of occupational aptitude patterns. Each occupational aptitude pattern consists of the most significant aptitudes and the critical scores for a group of occupations having similar aptitude requirements. An individual's aptitude scores are compared with norms for an occupation and a letter grade "H", "M", or "L" is assigned for the occupation: 1. If the individual's obtained scores meet or exceed all of the norms, the letter "H" is assigned; 2. If the individual's obtained scores plus 1 SE_m meet or exceed all of the norms, the letter "M" is assigned; 3. If his scores are below the requirements for an "M", the letter grade "L" is assigned. The interpretation of these letter grades is as follows:

- H - The individual's scores equal or exceed those of workers judged to be satisfactory in the occupations. If he is also qualified on the basis of factors other than aptitudes, there is a good probability that he will do well on the job.
- M - The individual's scores are close to those of workers judged to be satisfactory in the occupations. However, the chances of his doing well on the job are somewhat lower than that of persons in the "H" category.
- L - The individual's scores are similar to or below those of workers found to be unsatisfactory in the occupation. The probability of his being satisfactory on the job is low and he should be considered for other jobs which utilize his stronger aptitudes.

Froehlich recommends the General Aptitude Test Battery for use in counseling and selection of persons 16 years and older. He feels that adequate data are now available to support its use in vocational counseling. "The outstanding characteristic of this multi-factored aptitude test is that a person's scores can be compared with 23 occupation patterns. These patterns are believed to be pertinent to about 500 occupations. . . . The occupational norms

are designed on the assumption that about one-third of the employees in a given job are regarded as unsatisfactory."⁶ Another reviewer, Lloyd G. Humphries, summarizes his opinion of the General Aptitude Test Battery as follows:

1. The tests of the GATB were selected and constructed as well as most.
2. The GATB has been validated and otherwise analyzed as well as or better than most.
3. If interviewers follow instructions, the GATB is used more effectively than most.⁷

Norming. Norms for the General Aptitude Test Battery have been provided for adults, ninth-grade students, and tenth-grade students. The United States Employment Service (USES) has gathered the data in cooperation with employers, colleges, and schools, and has transmitted the data to the national office of USES. The national office has integrated the occupational norms into the Occupational Aptitude Pattern structure. There are many occupational areas not yet covered. When a need occurs for tests for one of these occupations, a measuring device is developed to meet that need. Thus, the national office is continually adding occupations to the occupational families already established, revising the composition of the families, and adding new Occupational Aptitude Patterns.⁸

6. Clifford P. Froehlich, in The Fifth Mental Measurements Yearbook, ed. Oscar K. Buros (New Jersey: The Gryphon Press, 1960), p. 609.

7. Lloyd G. Humphries, *ibid.*, p. 611.

8. Manual for the General Aptitude Test Battery, Section III (Washington, United States Department of Labour, Manpower Administration, Bureau of Employment Security, 1967), p. 43.

The process of developing aptitude norms for an occupation involves several steps: job analysis, development of a suitable criterion with which test scores can be compared, selection of an experimental battery, selection of sample, analysis of data, and establishment of final test norms.

Validity. Data collected in test development studies conducted by USES in cooperation with the State Employment Services have yielded measures of either predictive validity or concurrent validity. Predictive validity tends to be slightly higher than concurrent validity in USES studies. The medians of the phi coefficients are .45 for predictive validity and .40 for concurrent validity.⁹

A number of studies have been reported on the correlations between scores on the General Aptitude Test Battery and scores on such widely used tests and interest measures as the Airman Classification Battery, the California Achievement Test, the Differential Aptitude Tests, and the Kuder Preference Record - Vocational. Some examples of the correlations between scores on aptitudes of the GATB and corresponding aptitudes of the DAT, based on a sample of 78 high school seniors are reported in Table 3.

Reliability. Results of studies cited in the Manual for the General Aptitude Test Battery indicate that the aptitudes of the GATB are measured reliably in the types of situations in which the battery is most commonly used. These studies were conducted with

9. Ibid., p. 57.

Table 2
Correlations of GATB Aptitude Scores with
Differential Aptitude Tests

| DAT APTITUDES | G | V | N | S | P | Q |
|----------------------|-----|-----|-----|-----|-----|-----|
| Verbal reasoning | .78 | .72 | .54 | .54 | .21 | .41 |
| Numerical ability | .66 | .52 | .62 | .32 | .01 | .22 |
| Abstract reasoning | .68 | .48 | .45 | .56 | .14 | .26 |
| Space relations | .59 | .49 | .24 | .72 | .21 | .22 |
| Mechanical reasoning | .62 | .56 | .25 | .68 | .13 | .09 |
| Clerical speed | .25 | .18 | .33 | .07 | .46 | .53 |
| Spelling | .66 | .66 | .57 | .21 | .03 | .51 |
| Sentences | .74 | .75 | .56 | .36 | .05 | .33 |

samples from a variety of high school, college, and adult populations, and with intervals between initial testing and retesting ranging from one day to three years. Under these conditions, reliability coefficients for most of the aptitudes were in the range of .80 to .90. In a few studies the reliabilities of Aptitudes G, V, and N and other aptitudes sometimes exceeded .90. In two studies in which two forms of the GATB were administered in alternating order to equated subsamples, there was no consistent difference between the equivalence coefficients.¹⁰

Interest Test

The Kuder Preference Record - Form C (Vocational) was used in this study as a measure of vocational interests. The Kuder

¹⁰. Ibid., p. 193.

measures interest in ten broad areas: outdoor, mechanical, computational, scientific, artistic, literary, musical, social service, and clerical. The author suggests the interest inventory as a suitable instrument for pointing out occupations for further study and for checking on a person's choice of occupations.

Support for the author's opinion of the usefulness of the Kuder is expressed by Pierce-Jones¹¹ who contends that it is an excellent inventory for preliminary surveys of interests in counseling and in school guidance and occupational instruction.

Norming. Norms are provided for high school boys and girls, based on the responses of a representative group of boys and girls in grades nine through 12 in United States high schools. Separate norms are also supplied for male and female adults.

Validity. Thorndike and Hagen suggest that in appraising the validity of an interest inventory as a description of how the individual feels about the activities and events in the world about him, the main issue is the truthfulness of his responses.¹² It may be somewhat difficult to determine whether responses have indeed been faked on the Kuder, although it does have a validity score included in its scoring key to help determine whether the respondent has answered his questions accurately. Thorndike and Hagen are of the opinion that there is probably no reason to anticipate intentional faking on the inventory when it is used for counseling and

11. John Pierce-Jones, in The Fifth Mental Measurements Yearbook, ed. Oscar K. Buros (New Jersey: The Gryphon Press, 1960), p. 892.

12. Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (New York: John Wiley & Sons, Inc., 1960, 3rd. ed.), p. 395.

to help the respondent, as is most often the case.¹³

Kuder occupational profiles have been prepared by determining the average level in each of the interest areas for individuals already working in the occupation. It is within this framework that studies of the validity of the Kuder as a predictor of later behaviour are conducted. One example of such a study is that conducted by McCully. He followed up a group of World War II veterans who had been given the Kuder at the end of the war. McCully located them several years later and determined their occupation. The results of his study show fairly substantial differences in pattern of interest for different occupations.¹⁴

Several studies have been conducted to determine the relationship of the Kuder Preference Record - Vocational with other criteria such as the Strong Vocational Interest Blank, the General Aptitude Test Battery, the Brainard Occupational Preference Inventory, and the Minnesota Vocational Interest Inventory.

Reliability. The Manual accompanying the Kuder gives separate reliability estimates for each of four different groups: 1,000 men; 1,000 women; 100 boys; and 100 girls. The average reliability reported is .90; the lowest is .84 and the highest is .93. Rosenberg, reporting on a study of high school pupils who were examined in the ninth grade and in the twelfth grade, gives

13. Ibid., p. 396.

14. C. H. McCully, "The Validity of the Kuder Preference Record," Doctoral dissertation, George Washington University, 1954.

test-retest correlations ranging between .47 and .75.

ADMINISTRATION AND SCORING OF TESTS

As has been stated previously, the questionnaire was administered to half the subjects in each group during the week of November 15, 1970. All subjects in the experimental group were administered the intelligence, aptitude, and interest tests in February, 1971. During the week of May 15, 1971, the questionnaire was completed by all the students in both the experimental group and the control group. Following this, the intelligence, aptitude and interest tests were administered to all subjects in the control group.

The aptitude test, the General Aptitude Test Battery, was administered by the investigator with special permission from the Client Testing Service of the Department of Manpower and Immigration at Ottawa, who also scored and analyzed the results. The interest test, the Kuder Preference Record - Form C (Vocational), was scored by the students. Interest profiles were then drawn by the students and the results interpreted to them by the investigator. The Lorge-Thorndike Intelligence Test was hand scored and the deviation I. Q. obtained from the table furnished by the authors.

TREATMENT OF DATA

All data from the questionnaires and tests were punched on IBM cards. The statistical procedures used to analyze the data and to test the hypotheses included a computer program to obtain a two-way analysis of variance. Chi-square tests and t-tests were also used in the analysis.

Chapter 4

ANALYSIS OF RESULTS

This chapter is concerned with the analyses which were carried out. The study was designed to determine the effect of group vocational guidance on the certainty, satisfaction, and realism of vocational choices made by grade eleven students. A group of students in one Newfoundland high school were selected for participation in the group vocational guidance program. Six months later they were compared with students from two other high schools which had not participated in such a program. The results of the comparison were analyzed in the manner to be described below.

The following hypotheses were tested, at the .05 level of significance:

Hypothesis 1 Participation in group vocational guidance will result in more changes of expressed choice than non-participation in group vocational guidance.

Both groups were divided into two subgroups, only one of which received the pre-test. Thus, the analysis of data related to this hypothesis is based on a sample of 34 students from the experimental group and 44 students from the control group. The chi-square statistic was used to test this hypothesis. Results are given in Table 3.

Table 3

Chi-square Analysis of Proportion of Students Who
Changed Their Choices over Treatment Period

| Group | Number who changed choice | Number who did not change choice |
|--------------|------------------------------|-------------------------------------|
| Experimental | 13 (37.1%) | 21 (62.9%) |
| Control | 25 (56.8%) | 19 (43.2%) |

$\chi^2 = 2.70$ $df = 1$ N.S. at .05 level

As shown in Table 3, the chi-square of 2.70 is not significant and Hypothesis 1 is rejected. There is no significant difference in the percentage of students who participated in group vocational guidance and changed their choices and the percentage of students who did not participate and who changed their choices.

The main hypotheses of this study, namely Hypotheses 2, 3, and 4, were tested on the sample from each group who were exposed to the pre-test.

Hypotheses 2a For students who participate in group vocational guidance and who subsequently change their choices, the post-test choices will be (i) more realistic, (ii) more satisfactory, and (iii) made with greater certainty.

2b For students who do not participate in group vocational guidance and who change their choices, the post-test choices will show no significant differences in (i) realism, (ii) satisfaction, and (iii) certainty.

Tables 4 and 5 give the results of the statistical analyses employed to test subsection (i) of Hypotheses 2a and 2b. A two-way analysis of variance with repeated measures on factor B (levels of certainty, satisfaction and realism) was employed, although the interest of the study lay only in the interaction between A (participation or non-participation in group vocational guidance) and B. Since the data involved unequal cell numbers, the unweighted means approach was used.¹ The comparisons made were hypothesized a priori, hence it was considered justifiable to use Duncan's New Multiple Range Test² to test the differences between pre- and post-test means for each group.

Table 4

Summary Analysis of Variance for Level of Realism
for Students Who Changed Their Choices

| Sources of variation | SS | df | MS | F | p |
|----------------------------|--------|----|-------|--------|---------|
| <u>Between subjects</u> | 36.900 | 37 | | | |
| A (groups) | 0.358 | 1 | 0.358 | 0.353 | 0.55627 |
| Subjects within groups | 36.542 | 36 | 1.015 | | |
| <u>Within subjects</u> | 29.258 | 38 | | | |
| B (pre- and post-tests) | 9.808 | 1 | 9.808 | 19.394 | 0.00009 |
| A x B | 1.243 | 1 | 1.243 | 2.457 | 0.12574 |
| B x subjects within groups | 18.207 | 36 | 0.506 | | |

1. Ben J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), p. 302.

2. Allen L. Edwards, Experimental Design in Psychological Research, 3rd. ed. (New York: Holt, Rinehart and Winston, 1968)

Table 5

Duncan's Test on Differences Between Pairs of Means
on Levels of Realism for Students
Who Changed Their Choices

| Measure | | 2 | 1 | 3 | 4 |
|---|--|-------------------------|-------|-------|-------|
| (i) | Means | 3.414 | 3.538 | 4.026 | 4.440 |
| 2 (Pre-test, control) | 3.414 | - | .124 | .612 | 1.026 |
| 1 (Pre-test, experimental) | 3.538 | | - | .488 | .902 |
| 3 (Post-test, experimental) | 4.026 | | | - | .414 |
| 4 (Post-test, control) | 4.440 | | | | - |
| Harmonic mean = 17.1 | | | | | |
| $MS_{\text{error}} = MS_B \times \text{subjects within groups}$ | | | | | |
| $\sqrt{MS_{\text{error}}/n} = \sqrt{0.506/17.1} = .1726$ | | | | | |
| (ii) | | k = 2 k = 3 k = 4 | | | |
| | $q_{.95}(r,36)$ | 2.87 | 3.02 | 3.11 | |
| (iii) | $\sqrt{MS_{\text{error}}/n} q_{.95}(r,36)$ | .495 | .521 | .537 | |
| | | | | | |
| | | 2 | 1 | 3 | 4 |
| (iv) | 2 | | - | * | * |
| | 1 | | | - | * |
| | 3 | | | | - |
| | 4 | | | | |

*Significant at .05 level.

In Table 5, the only significant difference pertinent to this study is that between means 2 and 4, that is, between pre- and post- levels of realism for the group which did not participate in the group vocational guidance program and changed their choice over the six-month period. While the experimental group did show some increase in realism over this period, the difference was not statistically significant. Thus, Hypotheses 2a and 2b must be rejected for the criterion realism.

Tables 6 and 7 summarize the analyses related to subsection (ii) of Hypotheses 2a and 2b, that is, the levels of satisfaction for students in the experimental group and students in the control group who changed their choices from pre-test to post-test.

Table 6

Summary Analysis of Variance for Level of Satisfaction
for Students Who Changed Their Choices

| Source of variation | SS | df | MS | F | p |
|----------------------------|--------|----|-------|-------|---------|
| <u>Between subjects</u> | 44.434 | 37 | | | |
| A (groups) | 0.499 | 1 | 0.499 | 0.409 | 0.52667 |
| Subjects within groups | 43.936 | 36 | 1.220 | | |
| <u>Within subjects</u> | 39.565 | 38 | | | |
| B (pre- and post-tests) | 5.815 | 1 | 5.815 | 6.237 | 0.01722 |
| A x B | 1.184 | 1 | 1.184 | 1.270 | 0.26726 |
| B x subjects within groups | 33.566 | 36 | 0.932 | | |

Table 7

Duncan's Test on Differences Between Pairs of Means
on Levels of Satisfaction for Students
Who Changed Their Choices

| Measure | | 1 | 2 | 4 | 3 |
|-----------------------------|-------|-------|-------|-------|-------|
| (i) | Means | 2.846 | 3.280 | 3.600 | 3.692 |
| 1 (Pre-test, experimental) | 2.846 | - | .434 | .754 | .846 |
| 2 (Pre-test, control) | 3.280 | | - | .320 | .412 |
| 4 (Post-test, control) | 3.600 | | | - | .092 |
| 3 (Post-test, experimental) | 3.692 | | | | - |

Harmonic mean = 17.1

$MS_{\text{error}} = MS_B \times \text{subj. within groups}$

$$\sqrt{MS_{\text{error}}/n} = .2342$$

| | | | | |
|-------|---|-------|-------|-------|
| | | k = 2 | k = 3 | k = 4 |
| (ii) | $q_{.95}(r, 36)$ | 2.87 | 3.02 | 3.12 |
| (iii) | $\sqrt{MS_{\text{error}}/n} q_{.95}(r, 36)$ | .672 | .707 | .730 |

| | | 1 | 2 | 4 | 3 |
|------|---|---|---|---|---|
| (iv) | 1 | | - | * | * |
| | 2 | | | - | - |
| | 4 | | | | |
| | 3 | | | | |

* Significant at .05 level.

As indicated in Table 7, there is a significant difference (increase) in the levels of satisfaction expressed by the experimental group from pre-test to post-test (means 1 and 3) but there is no significant difference in the levels of satisfaction expressed by the control group. Hence Hypotheses 2a and 2b can be accepted for the criterion satisfaction.

Tables 8 and 9 summarize the results of analyses of data related to subsection (iii) of Hypotheses 2a and 2b, that is, the levels of certainty expressed by students in the experimental and control groups who changed their choices from pre-test to post-test.

Table 8

Summary Analysis of Variance for Levels of Certainty
for Students Who Changed Their Choices

| Source of variation | SS | df | MS | F | p |
|----------------------------|--------|----|-------|-------|---------|
| <u>Between subjects</u> | 50.487 | 37 | | | |
| A (groups) | 0.025 | 1 | 0.025 | 0.018 | 0.89387 |
| Subjects within groups | 50.462 | 36 | | | |
| <u>Within subjects</u> | 39.203 | 38 | | | |
| B (pre- and post-tests) | 5.453 | 1 | 5.453 | 5.942 | 0.01985 |
| A x B | 0.716 | 1 | 0.716 | 0.780 | 0.38294 |
| B x subjects within groups | 33.034 | 36 | 0.918 | | |

Table 9

Duncan's Test on Differences Between Pairs of Means
on Levels of Certainty for Students
Who Changed Their Choices

| Measures | | 1 | 2 | 4 | 3 |
|-----------------------------|-------|-------|-------|-------|-------|
| (i) | Means | 3.077 | 3.320 | 3.680 | 3.846 |
| 1 (Pre-test, experimental) | 3.077 | - | .243 | .603 | .769 |
| 2 (Pre-test, control) | 3.320 | | - | .360 | .526 |
| 4 (Post-test, control) | 3.680 | | | - | .166 |
| 3 (Post-test, experimental) | 3.846 | | | | - |

Harmonic mean = 17.1

$MS_{\text{error}} = MS_B \times \text{subjects within groups} = 0.918$

$\sqrt{MS_{\text{error}}/n} = 0.2324$

| | | | | |
|-------|---|-------|-------|-------|
| | | k = 2 | k = 3 | k = 4 |
| (ii) | $q_{.95}(r, 36)$ | 2.87 | 3.02 | 3.11 |
| (iii) | $\sqrt{MS_{\text{error}}/n} q_{.95}(r, 36)$ | .667 | .702 | .723 |

| | | | | | |
|------|---|---|---|---|---|
| | | 1 | 2 | 4 | 3 |
| (iv) | 1 | | | - | * |
| | 2 | | | | - |
| | 4 | | | | |
| | 3 | | | | |

* Significant at .05 level.

As indicated in Table 9, there is a significant difference in the levels of certainty expressed by students in the experimental group who changed their choices from pre-test to post-test (means 1 and 3), but there is no significant difference in the levels of certainty expressed by the control group (means 2 and 4). In light of these findings, Hypotheses 2a and 2b can be accepted for the criterion certainty.

While Hypothesis 2 dealt with changes in the levels of realism, satisfaction, and certainty where the students changed their choices from pre-test to post-test, Hypotheses 3 and 4 were concerned with those students who did not change their choices. It was generally accepted that a choice judged to be realistic at the time of the pre-test would also be realistic at the time of the post-test, six months later. It was not considered likely that interests, aptitudes, achievement level, or most of the factors influencing choice would have changed sufficiently over the six-month period to make a choice that remained the same from pre-test to post-test become more or less realistic for a student. The same principle was applied to unrealistic choices. Thus it was possible to analyze the changes in certainty and satisfaction of those students from both the experimental group and the control group whose choices were judged realistic (Hypothesis 3) and of those with choices judged unrealistic (Hypothesis 4).

Hypotheses 3a For students with choices judged realistic, who participate in group vocational guidance, but who do not change their choices, the post-test choices will be (i) more satisfactory and (ii) made with greater certainty.

- 3b For students with choices judged realistic, who do not participate in group vocational guidance and do not change their choices, the post-test choices will show no significant differences in (i) satisfaction and (ii) certainty.

Tables 10 and 11 summarize the results of the analyses of data related to subsection (i) of Hypotheses 3a and 3b, that is, with reference to the levels of satisfaction expressed by students in the experimental group and students in the control group who did not change their vocational choices over the six-month period and whose choices were judged to be realistic.

Table 10

Summary Analysis of Variance for Levels of Satisfaction
for Students Who Did Not Change Their Choices
Where Choices Were Judged Realistic

| Source of variation | SS | df | MS | F | p |
|----------------------------|--------|----|-------|-------|---------|
| <u>Between subjects</u> | 33.933 | 29 | | | |
| A (groups) | 0.933 | 1 | 0.933 | 0.792 | 0.38108 |
| Subjects within groups | 33.000 | 28 | 1.179 | | |
| <u>Within subjects</u> | 11.005 | 30 | | | |
| B (pre- and post-tests) | 1.071 | 1 | 1.071 | 3.022 | 0.09315 |
| A x B | 0.005 | 1 | 0.005 | 0.013 | 0.91055 |
| B x subjects within groups | 9.929 | 28 | 0.355 | | |

Table 11

Duncan's Tests on Differences Between Pairs of Means
on Levels of Satisfaction for Students Who
Did Not Change Their Choices Where
Choices Were Judged Realistic

| Measures | | 1 | 2 | 3 | 4 |
|-----------------------------|-------|-------|-------|-------|-------|
| (i) | Means | 3.625 | 3.857 | 3.875 | 4.143 |
| 1 (Pre-test, experimental) | 3.625 | - | .232 | .250 | .518 |
| 2 (Pre-test, control) | 3.857 | | - | .018 | .286 |
| 3 (Post-test, experimental) | 3.875 | | | - | .268 |
| 4 (Post-test, control) | 4.143 | | | | - |

Harmonic mean = 14.9

$MS_{\text{error}} = MS_B \times \text{subjects within groups} = 0.355$

$\sqrt{MS_{\text{error}}/n} = 0.1544$

| | | | | |
|-------|---|-------|-------|-------|
| (ii) | | k = 2 | k = 3 | k = 4 |
| | $q_{.95}(r, 28)$ | 2.89 | 3.04 | 3.13 |
| (iii) | $\sqrt{MS_{\text{error}}/n} q_{.95}(r, 28)$ | .446 | .469 | .483 |

| | 1 | 2 | 3 | 4 |
|------|---|---|---|---|
| (iv) | 1 | | - | * |
| | 2 | | | - |
| | 3 | | | |
| | 4 | | | |

* Significant at .05 level.

As indicated in Table 11, no significant difference exists between means 1 and 3, pre- and post-test means on levels of satisfaction for the students of the experimental group who did not change their choices, where the choices were judged to be realistic. Thus, Hypothesis 3a is rejected for the criterion satisfaction. Also, there is no significant difference in the means for the control group over the treatment period, and Hypothesis 3b can be accepted for the criterion satisfaction.

Tables 12 and 13 consist of the analyses of data relating to the levels of certainty expressed by those students who did not change their choices, where the choices were judged realistic. These analyses test subsection (ii) of Hypotheses 3a and 3b.

Table 12

Summary Analysis of Variance for Levels of Certainty
for Students Who Did Not Change Their Choices
Where Choices Were Judged Realistic

| Sources of variation | SS | df | MS | F | p |
|----------------------------|--------|----|-------|-------|---------|
| <u>Between subjects</u> | 36.683 | 29 | | | |
| A (groups) | 0.036 | 1 | 0.036 | 0.028 | 0.86948 |
| Subjects within groups | 36.647 | 28 | 1.309 | | |
| <u>Within subjects</u> | 23.417 | 30 | | | |
| B (pre- and post-tests) | 3.667 | 1 | 3.667 | 5.216 | 0.03016 |
| A x B | 0.067 | 1 | 0.067 | 0.095 | 0.75983 |
| B x subjects within groups | 19.683 | 28 | 0.703 | | |

Table 13

Duncan's Tests on Differences Between Pairs of Means
on Levels of Certainty for Students Who
Did Not Change Their Choices Where
Choices Were Judged Realistic

| Measures | | 1 | 2 | 4 | 3 |
|---|------------------------------|--|-------|-------|-------|
| (i) | Means | 3.625 | 3.643 | 4.071 | 4.188 |
| 1 (Pre-test, experimental) | 3.625 | - | .018 | .446 | .563 |
| 2 (Pre-test, control) | 3.643 | | - | .428 | .545 |
| 4 (Post-test, control) | 4.071 | | | - | .117 |
| 3 (Post-test, experimental) | 4.188 | | | | - |
| Harmonic mean = 14.9 | | | | | |
| $MS_{\text{error}} = MS_{B \times \text{subjects within groups}} = 0.703$ | | | | | |
| $\sqrt{MS_{\text{error}}/n} = .2172$ | | | | | |
| (ii) | | $k = 2$ $k = 3$ $k = 4$ $q_{.95}(r, 28)$ 2.89 3.04 3.13 | | | |
| (iii) | $\sqrt{MS_{\text{error}}/n}$ | $q_{.95}(r, 28)$ | .628 | .659 | .680 |
| | | 1 | 2 | 4 | 3 |
| (iv) | 1 | | | | - |
| | 2 | | | | |
| | 4 | | | | |
| | 3 | | | | |

Level of significance = .05.

There is no statistically significant evidence, as shown in Table 13, to support Hypothesis 3a for the criterion certainty, but Hypothesis 3b may be accepted for this criterion.

Hypotheses 4a For students with choices judged unrealistic, who participate in group vocational guidance but do not change their choices, the post-test choices will be (i) less satisfactory and (ii) made with less certainty.

4b For students with choices judged unrealistic, who do not participate in group vocational guidance and do not change their choices, the post-test choices will show no significant differences in (i) satisfaction and (ii) certainty.

Tables 14 and 15 summarize the analyses of data relating to the levels of satisfaction expressed by those students who did not change their choices, where the choices were judged unrealistic. These analyses test subsection (i) of Hypotheses 4a and 4b.

Table 14

Summary Analysis of Variance for Levels of Satisfaction
for Students Who Did Not Change Their Choices
Where Choices Were Judged Unrealistic

| Sources of variation | SS | df | MS | F | p |
|----------------------------|-------|----|-------|-------|---------|
| <u>Between subjects</u> | 5.450 | 9 | | | |
| A (groups) | 0.050 | 1 | 0.050 | 0.074 | 0.79241 |
| Subjects within groups | 5.400 | 8 | 0.675 | | |
| <u>Within subjects</u> | 5.500 | 10 | | | |
| B (pre- and post-tests) | 1.250 | 1 | 1.250 | 3.333 | 0.10533 |
| A x B | 1.250 | 1 | 1.250 | 3.333 | 0.10532 |
| B x subjects within groups | 3.000 | 8 | 0.375 | | |

Table 15

Duncan's Tests on Differences Between Pairs of Means
on Levels of Satisfaction for Students Who
Did Not Change Their Choices Where
Choices Were Judged Unrealistic

| Measures | | 1 | 2 | 4 | 3 |
|---|------------------------------|----------------|-------|-------|-------|
| (i) | Means | 3.400 | 4.000 | 4.000 | 4.400 |
| 1 (Pre-test, experimental) | 3.400 | - | .600 | .600 | 1.000 |
| 2 (Pre-test, control) | 4.000 | | - | .000 | .400 |
| 4 (Post-test, control) | 4.000 | | | - | .400 |
| 3 (Post-test, experimental) | 4.400 | | | | - |
| Harmonic mean = 5.0 | | | | | |
| $MS_{\text{error}} = MS_B \times \text{subjects within groups}$ | | | | | |
| $\sqrt{MS_{\text{error}}/n} = .2740$ | | | | | |
| (ii) | | | k = 2 | k = 3 | k = 4 |
| | $q_{.95}(r,8)$ | | 3.26 | 3.40 | 3.48 |
| (iii) | $\sqrt{MS_{\text{error}}/n}$ | $q_{.95}(r,8)$ | .894 | .932 | .952 |
| | | | | | |
| | | 1 | 2 | 4 | 3 |
| (iv) | 1 | | | - | * |
| | 2 | | | | - |
| | 4 | | | | |
| | 3 | | | | |

*Significant at .05 level.

As indicated in Table 15, there is a significant difference in the levels of satisfaction expressed by students in the experimental group; this difference is not in the direction hypothesized, however. No significant differences were found in the levels of satisfaction expressed by the control group from pre-test to post-test. On the basis of these findings, Hypothesis 4a must be rejected and Hypothesis 4b can be accepted for the criterion satisfaction.

Tables 16 and 17 summarize the analyses of data pertaining to the levels of certainty expressed by students who did not change their choices, where the choices were judged to be unrealistic. The analysis of data in this instance tests subsection (ii) of Hypotheses 4a and 4b.

Table 16

Summary of Analysis of Variance for Levels of Certainty
for Students Who Did Not Change Choices Where
These Choices Were Judged Unrealistic

| Sources of variation | SS | df | MS | F | p |
|----------------------------|-------|----|-------|-------|---------|
| <u>Between subjects</u> | 5.200 | 9 | | | |
| A (groups) | 0.000 | 1 | 0.000 | 0.000 | 0.38108 |
| Subjects within groups | 5.200 | 8 | 0.650 | | |
| <u>Within subjects</u> | 8.000 | 10 | | | |
| B (pre- and post-tests) | 0.800 | 1 | 0.800 | 1.600 | 0.24149 |
| A x B | 3.200 | 1 | 3.200 | 6.400 | 0.03527 |
| B x subjects within groups | 4.000 | 8 | 0.500 | | |

Table 17

Duncan's Tests on Differences Between Pairs of Means
on Levels of Certainty for Students Who
Did Not Change Their Choices Where
Choices Were Judged Unrealistic

| Measures | | 1 | 4 | 2 | 3 |
|-----------------------------|-------|-------|-------|-------|-------|
| (i) | Means | 3.200 | 3.600 | 4.000 | 4.400 |
| 1 (Pre-test, experimental) | 3.200 | - | .400 | .800 | 1.200 |
| 4 (Post-test, control) | 3.600 | | - | .400 | .800 |
| 2 (Pre-test, control) | 4.000 | | | - | .400 |
| 3 (Post-test, experimental) | 4.400 | | | | - |

Harmonic mean = 5.0

$MS_{\text{error}} = MS_B \times \text{subjects within groups}$

$$\sqrt{MS_{\text{error}}/n} = .3162$$

| | | | | | |
|-------|--------------------------------------|-----------------|---------|---------|-------|
| (ii) | | $k = 2$ | $k = 3$ | $k = 4$ | |
| | $q_{.95}(r, 8)$ | 3.26 | 3.40 | 3.48 | |
| (iii) | $\sqrt{\frac{MS_{\text{error}}}{n}}$ | $q_{.95}(r, 8)$ | 1.030 | 1.075 | 1.098 |

| | | 1 | 4 | 2 | 3 |
|------|---|---|---|---|---|
| (iv) | 1 | | | - | * |
| | 4 | | | | - |
| | 2 | | | | |
| | 3 | | | | |

*Significant at .05 level.

As indicated in Table 17, there is a significant difference in the levels of certainty expressed on the pre-test and the post-test by students in the experimental group who did not change their choices, where the choices were judged to be unrealistic. This difference was in the opposite direction to that hypothesized, hence Hypothesis 4a must be rejected for the criterion certainty. There was no significant difference in the pre-test and post-test levels of certainty expressed by the control group, and Hypothesis 4b can be accepted for this criterion.

Hypothesis 5 There will be no significant differences, as assessed by the pre-test, between the experimental group (High School #1) and the control group (High Schools #2 and #3) in the levels of (i) realism, (ii) satisfaction, and (iii) certainty.

This hypothesis was tested by the t-statistic, the results of which are tabulated in Table 18.

Table 18

Summary of Comparisons of Means for Levels of Certainty, Satisfaction, and Realism Obtained on Pre-test by Experimental and Control Groups

| Variable compared | E Means | E S.D. | C Means | C S.D. | t ratio | Significance |
|-------------------|---------|--------|---------|--------|---------|--------------|
| Certainty | 3.35 | 0.88 | 3.48 | 1.17 | 0.538 | N.S. |
| Satisfaction | 3.29 | 1.41 | 3.55 | 1.00 | 0.848 | N.S. |
| Realism | 3.91 | 0.85 | 3.61 | 0.98 | 1.412 | N.S. |

t Ratio of 1.995 = .05 level; d.f. = 76

On the basis of the findings indicated in Table 18, Hypothesis 5 may be accepted for all three criteria.

Hypothesis 6 There will be no significant difference, as assessed by the post-test, in levels of (i) realism, (ii) satisfaction, and (iii) certainty (a) between the subjects of the experimental group who were exposed to the pre-test and those who were not, and (b) between the subjects of the control group who were exposed to the pre-test and those who were not.

This hypothesis was tested by the t-statistic, results of which are tabulated in Table 19.

Table 19

Summary of Comparisons of Means for Levels of Certainty, Satisfaction, and Realism on Post-test by Those Exposed to Pre-test and Those Who Were Not

| Group | Variable compared | Pre-tested Mean | S.D. | Not Pre-tested Mean | S.D. | Obtained t | t ratio at .05 |
|----------------|-------------------|-----------------|------|---------------------|------|------------|----------------|
| <u>Exper.</u> | | (n = 34) | | (n = 34) | | | |
| | Certainty | 4.09 | 0.99 | 3.53 | 1.35 | 1.909* | 1.9980 |
| | Satis. | 3.88 | 0.94 | 3.53 | 1.35 | 0.492* | 1.9980 |
| | Realism | 4.23 | 0.85 | 4.12 | 0.94 | 0.507* | 1.9980 |
| <u>Control</u> | | (n = 44) | | (n = 41) | | | |
| | Certainty | 3.80 | 0.95 | 3.63 | 0.93 | 0.837* | 1.9923 |
| | Satis. | 3.82 | 0.97 | 3.76 | 0.77 | 0.165* | 1.9923 |
| | Realism | 4.30 | 0.84 | 4.27 | 0.69 | 0.764* | 1.9923 |

*Not significant at the .05 level

On the basis of the findings indicated in Table 19, Hypothesis 6 can be accepted.

An interesting finding, which had not been hypothesized, was that the mean levels of realism, certainty, and satisfaction of choices made on the pre-test by students who changed their choices during the treatment period differed from those of students who did not change their choices. Table 20 summarizes the analysis of data employed to test the significance of these differences; this analysis was carried out across the combined groups, that is, the experimental group and the control group.

Table 20

Summary of Comparisons of Means for Pre-test Levels of Certainty, Satisfaction, and Realism for Students Who Changed Their Choices and Those Who Did Not

| Variable Compared | Change N = 38 | | No change N = 40 | | Obtained t | Sig. |
|-------------------|------------------|------|---------------------|------|---------------|------|
| | Mean | S.D. | Mean | S.D. | | |
| Certainty | 3.24 | 1.32 | 3.63 | 0.73 | 1.696 | N.S. |
| Satisfaction | 3.13 | 1.04 | 3.73 | 0.79 | 2.833 | N.S. |
| Realism | 3.46 | 0.77 | 4.04 | 0.88 | 3.132 | Sig. |

t Ratio of 1.995 = .05 level; d.f. = 76

As indicated in Table 20, the pre-test levels of certainty, satisfaction and realism for students who did not change their choices were higher than the pre-test levels for students who did change their choices over the treatment period. For realism and satisfaction, but not for certainty, these differences were statistically significant.

SUMMARY

As a result of the statistical analysis of the data obtained in this study, the following observations were made:

1. Of the students who participated in group vocational guidance, the proportion who changed their choices over the treatment period was not significantly higher than that of those students who did not participate in group vocational guidance during this period.

2. Students who participated in group vocational guidance and subsequently changed their vocational choices became more satisfied with their new choices and more certain of them. They did not make significantly more realistic choices. On the other hand, students who had not participated in group vocational guidance made more realistic choices at the end of the six-month period, but they were not more satisfied with or more certain of these choices.

3. No significant differences in certainty and satisfaction were found over the treatment period for those who did not change their choices, where these choices were judged to be realistic. This finding is true for both the group of students who participated in group vocational guidance and those who did not.

4. There was a significant increase in certainty and satisfaction for those students who had participated in group vocational guidance and who did not change their choices, where the choices were judged to be unrealistic. For the corresponding control group, no significant differences in certainty and satisfaction were found.

5. At the beginning of the six-month treatment period, there were no significant differences between the experimental group and the control group on the criterion variables.

6. The administration of the pre-test did not significantly affect the characteristics of choice being measured.

7. The pre-test levels of certainty, satisfaction and realism for students who did not change their choices during the treatment period were higher than for those students who changed their choices; for satisfaction and realism these differences were statistically significant.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

This study was designed to assess the effect of a group vocational guidance program on the certainty, satisfaction, and realism of vocational choices made by grade eleven students in a selected Newfoundland high school. The specific program studied was part of the regular guidance activities in this school; the objectives of the group vocational guidance program in the grade eleven classes included the increasing of certainty, satisfaction, and realism of vocational choices. It was felt that these objectives were important because of their relationship to the immediate vocational and psychological needs of the students and to the realities of the students' world.

Population

The population of 153 grade eleven students was selected from three schools in two Newfoundland communities. The experimental group was composed of 68 students at Lewisporte Integrated High School. The control group consisted of 56 students at Clarenville Integrated High School and 29 students at Lewisporte Pentecostal High School.

Instruments

A questionnaire (see Appendix B) was administered as a pre-test and post-test measure of vocational choice. In addition,

the questionnaire elicited the levels of certainty of and satisfaction with the choices stated by students; it also provided other information considered to be useful in judging the level of realism of these choices.

The General Aptitude Test Battery and the Kuder Preference Record - Form C (Vocational) were administered to students in the experimental group and the results interpreted to them as part of the vocational guidance program. These tests were administered to students in the control group after the post-test. Scores on the Kuder and the GATB, along with scores on the Lorge-Thorndike Intelligence Test, high school achievement record, and other pertinent data were used by the judges in assessing the level of realism of students' choices.

Using the definitions of the various levels of realism provided (see Appendix I), three judges independently assessed the realism of each choice made by students on the pre-test and the post-test. The average of the three scores on realism provided the score which was then used in the analysis of the data.

Findings

The results of the analysis of the data obtained in this study revealed few significant differences between the experimental group and the control group on the three criteria being studied. For those who changed their choices over the treatment period, it was found that a significant increase in realism had been made by the control group, rather than by the experimental group as had been hypothesized. Only the experimental group showed significant increases in certainty and satisfaction after changing their choices.

Thus, Hypothesis 2 was rejected for the criterion realism but accepted for the criteria certainty and satisfaction.

For students who did not change their choices, where the choices were judged to be realistic, no significant differences were found between the pre- and post-test levels of certainty or satisfaction for either the experimental or the control group. Where the choices were judged to be unrealistic, only the experimental group showed any significant differences on certainty and satisfaction, but these differences were not in the direction hypothesized. Therefore, Hypotheses 3 and 4 were rejected for the experimental group and accepted for the control group.

Contrary to what was predicted in Hypothesis 1, there was no significant difference in the proportion of students in each group who changed their choices over the treatment period. The remaining two supporting hypotheses in this study, namely, Hypotheses 5 and 6 were both accepted. There was no significant difference between the two groups on the criteria being investigated, as assessed by the pre-test. The pre-test itself did not significantly affect the outcome of the experiment.

CONCLUSIONS

Realism

While the realism of choices made by the control group increased significantly from pre-test to post-test, the increase made by the experimental group was not significant. It appears that factors not under experimental control may have been operating that account for this finding. It is possible that students in the

control group had learned enough about their own capabilities and about job requirements to more accurately assess the wisdom of their choices. The source of this information is unknown and may include the variety of opportunities, uncontrolled by this study, whereby a student, normally, without the aid of a planned or conscious guidance effort, can get advice on a suitable career. Whatever factors operated to bring about the increase in realism for the control group apparently were not effective in producing similar results for the experimental group. A number of possibilities may be considered here. First, the factors responsible for the increase in realism for the control group may not have been present in the experimental setting. Secondly, these factors may have been present, but they did not have as great an influence on the experimental group as they did on the control group. In the latter event, it may be that the interaction of these factors with the group guidance program had an adverse affect on the desired outcome of the program. The possibility also exists that the conceptualization of realism and its consequent operationalization may not have been reflected in the measures used in this study.

Certainty and Satisfaction

The findings relevant to these two criteria were similar. Group vocational guidance was effective in increasing the certainty of and satisfaction with vocational choices for those students who participated in group vocational guidance and who changed their choices over the treatment period. A survey of the pre- and post-test means for the control group revealed increases in certainty and satisfaction for these students, but these increases were not

statistically significant.

For students who changed their choices, the increases observed in certainty and satisfaction for those who participated in group vocational guidance were the only results which supported the hypotheses of this study. It can be concluded, therefore, that those students, although they did not make significantly more realistic choices, became more satisfied with and more certain of their new choices. On the other hand, the data suggest that, had they not participated in the program, they would have made more realistic choices.

For students in both the experimental group and the control group who did not change their choices, where these choices were judged to be realistic, analysis of the data revealed slight, but not statistically significant, increases in certainty and satisfaction from pre-test to post-test. It appears that those students felt no differently about their choices at the end of the treatment period from what they did at the beginning. They may have felt that their initial choices were wise ones. This possibility is, in fact, supported by the data, since it was found that students who did not change their choices were already making choices that were significantly more realistic than those of students who later changed their choices. Also, students who did not change their choices appeared to be, at the time of the pre-test, significantly more satisfied with their choices than were those students who changed their choices; they were also more certain than were the latter group, but not significantly so. This may explain why students who did not change their choices did not show a significant increase in certainty and satisfaction over the treatment period.

One rather puzzling finding of this study is that those members of the experimental group who did not change their choices, where the choices were judged to be unrealistic, became significantly more certain and more satisfied. This finding is directly opposed to what it would seem reasonable to expect. If vocational guidance is to be effective in those areas under consideration in this study, it would seem logical to expect that those who were reluctant to change from an unrealistic choice would at least become less satisfied with having chosen it and less certain of actually pursuing it. The data indicates, however, that they became more certain and more satisfied. It should be noted that since this was a very small group of students (five) the results may be somewhat distorted. Also, these students were not told that their choices were unrealistic; if they had had this information, they might have been stimulated to change their choices to more realistic ones. It may not be sufficient in a vocational guidance program that students be given the information about themselves and the information about careers that are the assumed prerequisites for making a wise vocational choice. All students may not have the ability to assimilate this information and determine for themselves the level of realism of their choices; they may have to be told that their choices are unrealistic or otherwise, and they may have to be given the reasons for such an opinion. It is debatable whether a group setting would be an appropriate place for giving students such information; indeed, individual counseling may help the students to arrive at this conclusion without having been told directly. It appears that if they can be guided to change their choices, group guidance will help them become more certain of and more satisfied with

their new choices.

It should be further noted that participation in the group vocational guidance program of this study was not voluntary. The program was an integral part of the guidance curriculum of the school; nevertheless, a few of the students did refuse to complete the questionnaire and the tests. Also, any student who came for individual counseling did so voluntarily; whether they came as a result of exposure to the group program or whether they would have come under other circumstances could not be determined. Indeed, it may have been the combination or the interaction of group guidance and voluntary individual counseling - for certainly the latter process did occur - that accounts for any results obtained. For the control group individual help was also available, as is usual in any high school, from teachers and principals. To reach certain objectives this appears to be as effective as the group and individual guidance available from a trained counselor. The results of the experiment indicate, however, that for certain students, namely those who change their vocational choices during their final year in high school, group guidance is effective in increasing the levels of certainty and satisfaction of those choices.

Concluding Remarks

The findings of this study suggest that for students who change their choices, group vocational guidance is effective in increasing significantly the levels of certainty and satisfaction. The level of realism for this group also increased, but this increase was not statistically significant.

A conflicting finding, but one which may be of importance,

was that students whose choices were judged to be realistic on the pre-test were also more satisfied with, and to a lesser extent more certain of, those choices. This suggests the possibility of a positive relationship between realism and the other two criteria, certainty and satisfaction. This observation was made following an analysis of the pre-test differences on the three criteria, between those who changed their choices and those who did not. In general, those who did not change were already making pre-test choices that were significantly more realistic than the pre-test choices of students who later changed their choices. It was further observed that the group making the more realistic choices were also more satisfied with and more certain of those choices, although the difference in certainty was not statistically significant. This finding implies that if students can be helped to make more realistic choices, they can at the same time be expected to be more satisfied with these choices and more certain of them.

The group guidance program of this study does not appear to be effective in helping students achieve significantly greater realism of vocational choice, although it seems reasonable to expect that guidance would increase realism, especially with those students who change their choices. The possibility must be considered that the relatively low reliability of two of the judges could have yielded realism scores that are not entirely indicative of the actual levels of realism of these students' choices. Another possibility is that the type of guidance program provided in this study does not adequately serve to increase the realism of students' choices. Consideration should be given to the provision of other programs, such as individual counseling, to help increase realism, accompanied by

group guidance to effect the desired increases in certainty and satisfaction.

RECOMMENDATIONS FOR FURTHER RESEARCH

While the effects of group vocational guidance with grade eleven students were explored in this study, it is recommended that group vocational guidance programs at other grade levels be studied.

The significantly higher degree of realism attained by students who did not participate in group vocational guidance introduces the question of which other factors influence vocational behaviour. Why did the students who did not participate in the guidance program achieve greater realism while those who participated did not? It is recommended that a study be conducted to determine the processes through which realistic choices are made and the factors most likely to influence students to make realistic choices.

In this study students were not told whether their choices were realistic or unrealistic. It is recommended that a study be conducted where students are given this information and guided toward more realistic choices. The basic suggestion here is that students as well as counselors need to be aware of the objectives of the program.

It is further recommended that a study be conducted to compare the results obtained when students who participate in group vocational guidance also receive individual counseling with those obtained for students who participate in a group program but do not receive individual counseling.

BIBLIOGRAPHY

A. BOOKS

- Bloomfield, Meyer. The Vocational Guidance of Youth. New York: Arno Press and The New York Times, 1969.
- Crites, John O. Vocational Psychology. New York: McGraw-Hill Book Co., 1969.
- Edwards, Allen L. Experimental Design in Psychological Research, 3rd. ed. New York: Holt, Rinehart and Winston, 1968.
- Ginzberg, Eli. The Development of Human Resources. New York: McGraw-Hill Book Co., 1966
- _____, and others. Occupational Choice: An Approach to a General Theory. New York: Columbia University Press, 1951.
- Hoppock, Robert. Occupational Information. New York: McGraw-Hill Book Co., 1967.
- Hopson, B., and J. Hayes. The Theory and Practice of Vocational Guidance. Oxford: Pergamon Press, 1968.
- Manpower and Education. Educational Policies Commission, National Education Association of the United States, and the American Association of School Administrators. Washington, 1956.
- Peters, Herman J., and James C. Hansen (eds.). Vocational Guidance and Career Development. London: Macmillan Co., 1969.
- Roe, Anne. Psychology of Occupations. New York: Wiley, 1956.
- Schneider, Alexander, and contributors. Counseling the Adolescent. San Francisco: Chandler Publishing Co., 1969.
- Super, Donald E. Psychology of Careers. New York: Harper and Row, 1957.
- _____, and P. L. Overstreet. The Vocational Maturity of Ninth Grade Boys. New York: Teachers College Bureau of Publications, 1960.
- Thorndike, Robert L., and Elizabeth Hagen. Measurement and Evaluation in Psychology and Education. New York: Wiley, 1960 (3rd. ed.)
- Tyler, Leona E. Work of the Counselor. New York: Appleton-Century-Crofts, 1961.

Williamson, E. G. Counseling Adolescents. New York: McGraw-Hill Book Co., 1950.

Winer, Ben J. Statistical Principles in Experimental Design. New York: McGraw Hill Book Co., 1962.

Zytowski, Donald G. (ed.). Vocational Behaviour. New York: Holt, Rinehart and Winston, 1968.

B. ARTICLES

Ashby, J. D., H. W. Wall, and Samuel H. Osipow. "Vocational Uncertainty and Indecision in College Freshman," Personnel and Guidance Journal, 44: 1037-1041, 1966.

Beilin, Harry. "Community Occupational Survey and Studies of Occupational Choice," Personnel and Guidance Journal, 44: 455-456, 1953.

Bilovsky, D., and others. "Individual and Group Counseling," Personnel and Guidance Journal, 31: 363-365, 1953.

Carp, Frances. "High School Boys are Realistic About Occupations," Occupations, 97-99, 1949.

Daws, Peter P. "What Will the School Counselor Do?" Education Research, 9: 83-92, 1966.

Freeman, Frank S. "Review of Kuder Preference Record (Vocational)," in Buros, O. K. The Fifth Mental Measurements Yearbook. New Jersey: Gryphon Press, 1960.

Froelich, Clifford P. "Review of the General Aptitude Test Battery," in Buros, O. K. The Fifth Mental Measurements Yearbook. New Jersey: Gryphon Press, 1960.

Gonyea, George G. "Appropriateness-of-Vocational-Choice as a Criterion of Vounseling Outcome," Journal of Counseling Psychology, 9: 213-219, 1962.

Hershenson, D. B., and R. M. Roth. "A Decisional Process Method of Vocational Development," Journal of Counseling Psychology, 13: 368-370, 1966.

Hewer, Vivian H. "Evaluation of a Criterion: Realism of Vocational Choice," Journal of Counseling Psychology, 13: 2899-2944, 1966.

_____. "Group Counseling, Individual Counseling and a College Class in Vocations," Personnel and Guidance Journal, 37: 660-665, 1959.

- Humphries, Lloyd G. "Review of the General Aptitude Test Battery," in Buros, O. K. The Fifth Mental Measurements Yearbook. New Jersey: Gryphon Press, 1960.
- Hoyt, Donald P. "An Evaluation of Group and Individual Programs in Vocational Guidance," Journal of Applied Psychology, 39: 25-30, 1955.
- Kohout, V. A., and J. W. M. Rothney. "A Longitudinal Study of Consistency of Vocational Preferences," American Educational Research Journal, 1: 10-21, 1964.
- Lipsett, Laurence. "Social Factors in Vocational Development," Personnel and Guidance Journal, 40: 432-437, 1962.
- Lurie, W. A., J. Goldfein, and R. Baxt. "An Intensive Vocational Counseling Program for Slow Learners in High School," Personnel and Guidance Journal, 39:21-29, 1960.
- Pierce-Jones, John. "Review of Kuder Preference Record - Vocational," in Buros, O. K. The Fifth Mental Measurements Yearbook. New Jersey: Gryphon Press, 1960.
- Porter, J. Richard. "Predicting Vocational Plans of High School Senior Boys," Personnel and Guidance Journal, 33: 215-218, 1954.
- O'Hara, Robert P. "A Theoretical Framework for the Use of Occupational Information," Personnel and Guidance Journal, 46: 636-640, 1968.
- Reed, Harold J. "Certain Aspects of Vocational Guidance in a Technological Age," Vocational Guidance Quarterly, 10: 90-93, 1962.
- Richardson, H., and H. Borow. "Evaluation of a Technique of Group Orientation for Vocational Counseling," Educational and Psychological Measurement, 12: 587-593, 1952.
- Rosenberg, Nathan. "Stability and Maturation of Kuder Interest Patterns during High School," Educational and Psychological Measurement, 13: 449-458, 1953.
- Shoben, E. J. "Some Problems in Establishing Criteria of Effectiveness," Personnel and Guidance Journal, 31: 289-291, 1953.
- Stephenson, Richard M. "Realism of Vocational Choice: a Critique and Example," Personnel and Guidance Journal, 35: 482-288, 1957.
- Super, Donald E. "Vocational Interest and Vocational Choice," Educational and Psychological Measurement, 7: 375-384, 1947.
- Wellman, Frank E. "Vocational Counseling of Adolescents: A Critical Look," Chronicle Guidance, SE June: 1-7, 1962.

C. MANUALS

Kuder Preference Record (Vocational) Technical Manual. Chicago:
Science Research Associates, 1957.

Lorge-Thorndike Intelligence Tests Technical Manual. Boston:
Houghton-Mifflin Co., 1966.

Lorge-Thorndike Intelligence Tests Administrator's Manual. Boston:
Houghton-Mifflin Co., 1954.

Manual for the General Aptitude Test Battery, Section III.
Washington: United States Department of Labour, Manpower
Administration, Bureau of Employment Security, 1967.

D. UNPUBLISHED MATERIALS

Hansen, J. T. "The Effects of Two Types of Counseling on the
Realism of Vocational Choices of High School Boys," Unpublished
Doctoral dissertation, University of Colorado, 1967.

McCully, C. H. "The Validity of the Kuder Preference Record."
Unpublished Doctoral dissertation, George Washington University,
1954.

Nissenson, N. "An Evaluation of Some Aspects of a Group Guidance
Program." Unpublished Master's thesis, Northwestern University,
1948.

Paulsen, Dorothy L. "The Career Commitment of Twelfth Grade Girls."
Unpublished Doctoral dissertation, Yale University, 1967.

E. DOCUMENTS

1961 Census of Canada. Ottawa: Queen's Printer, 1961.

APPENDIX A

COPY OF LETTER SENT TO PRINCIPALS OF SCHOOLS

Memorial University of Newfoundland,
St. John's, Newfoundland,
October 27, 1970.

To The Principal

Dear Sir,

As I indicated to you in our recent telephone conversation, I am presently studying toward a Master Of Education degree in Guidance and Counselling, at Memorial University of Newfoundland. I propose, for my thesis, to conduct a study of the effect of group vocational guidance on certain characteristics of vocational choices made by grade eleven students. I am very grateful to you for your willingness to cooperate with me in this study.

I would like to have your grade eleven students complete a brief questionnaire in November and again in April. In addition, I would be interested in administering certain standardized tests, specifically in interest and aptitude areas. I shall discuss the nature of these tests when I visit your school during the week of November 9.

Once again, may I express my warmest thanks for your help.

Yours sincerely,

Marcia O. L. Dunn,
Graduate Student,
Department of Educational Psychology,
Guidance and Counselling

APPENDIX B

QUESTIONNAIRE

Part I - School and Work Experience

1. Name _____ School _____
 Last name First name

2. What is your favorite subject in school? Check one.

- | | | | |
|------------------------|-----|-------------------------|-----|
| (1) English Language | () | (9) Biology | () |
| (2) English Literature | () | (10) Physical Science | () |
| (3) Mathematics | () | (11) Geology | () |
| (4) History | () | (12) French | () |
| (5) Geography | () | (13) Art | () |
| (6) Physics | () | (14) Economics | () |
| (7) Chemistry | () | (15) Physical Education | () |
| (8) Earth Science | () | (16) Other _____ | () |
- (Please specify)

3. Of the subjects listed in question 2, which is your second favorite? _____

4. Of the subjects listed in question 2, which do you dislike most?

5. On an average, how many hours each school day do you study outside of class? _____

6. List any extra-curricular activities you participate in (e.g. Red Cross Youth, sports, debating, Girl Guides, Boy Scouts) and give the approximate number of hours per week you spend on each one:

| <u>Activity</u> | <u>Time Spent Per Week</u> |
|-----------------|----------------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

7. Do you have any hobbies? Yes _____ No _____

If yes, list in order of preference:

8. Do you have a part-time job on weekends or after school? Yes _____

No _____

If yes, indicate the nature of this work: _____

How much time does it take each week? _____

Who is your employer? _____

What is your monthly salary? _____

9. List all your other work or employment experiences to date
(including part-time or summer jobs):

| Firm or Individual | Approximate date | Nature of work | Monthly salary |
|-----------------------|---------------------|----------------|-------------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

10. Which of the jobs listed in question 9 did you like best?

Which did you like the least? _____

Part II - Plans for the Future

11. What is your present choice of occupation? _____

12. What kind of preparation, if any, is required for the occupation
specified in question 11?

13. How long will this training (indicated in question 12) take?

14. What plans, if any, have you made to get the necessary training?

15. What yearly salary range do you expect to receive when you enter this occupation? Check one.

- | | | | |
|----------------------|-----|----------------------|-----|
| (1) Less than \$3000 | () | (4) \$5001 to \$6000 | () |
| (2) \$3000 to \$4000 | () | (5) \$6001 to \$7000 | () |
| (3) \$4001 to \$5000 | () | (6) More than \$7000 | () |
| | | (7) I don't know | () |

16. How many openings exist in this occupation? Check one.

- | | | | |
|------------------|-----|--------------------|-----|
| (1) A great many | () | (4) None | () |
| (2) Quite a few | () | (5) I have no idea | () |
| (3) Not many | () | | |

17. What particular interests, abilities, or other attributes do you have which you believe qualifies you for this occupation?

18. When did you make your present occupational choice? Check one.

- | | | | |
|---------------------------|-----|---------------------------|-----|
| (1) Within the last month | () | (3) More than a year ago | () |
| (2) Within the last year | () | (4) More than 3 years ago | () |

19. Why did you make this choice? Check reason or reasons.

- | | |
|---|--|
| ___ 1. Family tradition or suggestion | ___ 6. A long personal interest in the work |
| ___ 2. Friend's or teacher's advice | ___ 7. It is most profitable financially |
| ___ 3. The vocation of someone I admire | ___ 8. It is best suited to my abilities |
| ___ 4. Suggested by study in school | ___ 9. Chosen as being most interesting intellectually |
| ___ 5. Choice made on my own responsibility | ___ 10. Other (Please specify) |
-

20. How certain are you that the occupation you have specified in question 11 is the one you really want to engage in? Check the most appropriate statement below:

- _____ (1) I am very certain; I do not expect to change my mind.
 _____ (2) I am fairly certain; there's only a slight possibility I'll change my mind.
 _____ (3) I don't know; I may change my mind and I may not.
 _____ (4) I'm fairly uncertain; it's quite possible I'll change my mind.
 _____ (5) I'm very uncertain; I'll probably change my mind.

21. How satisfied are you with the choice you have indicated in question 11? Check the most appropriate statement below:

- _____ (1) I'm totally satisfied; I really wouldn't want to do anything else.
 _____ (2) I'm fairly well satisfied; I rarely have doubts about it.
 _____ (3) It's hard to say; sometimes I'm satisfied and sometimes I'm not.
 _____ (4) I'm somewhat dissatisfied; quite often I think I'd like to do something else.
 _____ (5) I'm totally dissatisfied; I really want to do something else.

22. To what extent does your school help you in giving you information about different kinds of jobs? Check one.

- | | | | |
|------------------|-----|-------------------|-----|
| (1) A great deal | () | (3) Not very much | () |
| (2) Some | () | (4) No help | () |

23. What occupation do your parents want you to follow? _____

Why? _____

24. Have you thought seriously what you might be doing 10, 20, 30 years from now? Yes _____ No _____

If yes, fill in as many as you can of the blanks below:

- (1) 10 years from now _____
 (2) 20 years from now _____
 (3) 30 years from now _____
 (4) 40 years from now _____
 (5) After 40 years from now _____

25. Finally, if you could do anything you wanted, what three jobs would you most like?

_____ ()

_____ ()

_____ ()

Number the jobs you have listed above (1, 2, or 3) in order of preference.

APPENDIX C

FILMS

The Importance of Goals

Finding Your Life's Work

Aptitudes and Occupations

Getting a Job

Planning Your Career

No Reason to Stay

How to Study

How to Take a Test

Electrician

Engineering

Challenge: Engineering and Telecommunications

Royal Canadian Mounted Police

The Challenge in Dentistry

The Challenge: The World of Business

Search Without End (Looking for a Career)

Physician and Surgeon

Vigil (Nursing)

APPENDIX D

FILMSTRIPS

The Meaning of Work

How Do You Join the Armed Forces

We Also Serve (for girls in the Armed Forces)

The Job Interview

Drop-in or Drop-out

Quit School Now and Pay Later

Learning on Your Own

Getting the Most out of Your Day

Your First Year in College

APPENDIX E

BOOKS

Your Future in Social Work
Your Future in Chemical Engineering
Your Future in the Electronics Industry
Your Future in Industrial Engineering
Your Future in Forestry
Your Future in Journalism
Your Future in Civil Engineering
Your Future in Pharmacy
Your Future in Fashion Design
Your Future as a Home Economist
Your Future as a Physician
Your Future as a Guidance Counsellor
Your Future as a Secretary
So You Want to be a Lawyer
So You Want to be a Doctor
So You Want to be a Social Worker
So You Want to be an Airline Stewardess
So You Want to be an Accountant
So You Want to be a Teacher
So You Want to be a Lawyer
So You Want to be a Nurse
School Careers Directory
Occupations and Careers

Air Hostess

Royal Canadian Mounted Police

Getting Started as an Author

The Scarlet Force

The Mounties

Airline Stewardess

Becoming a Nurse

Nursing

Aim for a Job in the Textile Industry

Find a Career in Auto Mechanics

The Retailing Experience

Aim for a Job in Drafting

Your Future in Banking

Your Future in Your Own Business

Your Future as a Temporary Office Worker

Your Future in Elementary School Teaching

Aim For a Job in Welding

From the Ground Up (Pilot)

APPENDIX F**TAPES**

Fisheries

Marine Engineering

Electronics

Trades and Technology

Accounting and Banking

Medicine

Law

Forestry

Agriculture

Cosmetology

Physical Education Instruction

Geology

Physiotherapy

X-ray Technology

Secretarial Science

Food Technology

APPENDIX G**GUEST SPEAKERS**

Royal Canadian Mounted Police

Manager of Air Canada

Federal Department of Fisheries

Memorial University of Newfoundland

Canada Manpower

Department of Social Services and Rehabilitation

School Nurse

APPENDIX H

INDIVIDUAL DATA SHEET

Student No. _____

Lorge-Thorndike

Verbal _____ Non-Verbal _____

Kuder Preference Record-
Vocational

File _____

_____ Outdoor

_____ Mechanical

_____ Computational

_____ Scientific

_____ Persuasive

_____ Artistic

_____ Literary

_____ Musical

_____ Social Service

_____ Clerical

General Aptitude Test Battery

_____ G - Intelligence

_____ V - Verbal Aptitude

_____ N - Numerical Aptitude

_____ S - Spatial Aptitude

_____ P - Form Perception

_____ Q - Clerical Perception

High School Academic Record

IX X XI

Eng. Lang. _____

Eng. Lit. _____

Maths. A. _____

Maths. B. _____

History _____

Geography _____

Economics _____

French _____

Earth Sci. _____

Phys. Sci. _____

Physics _____

Biology _____

Chemistry _____

Art _____

Extra-curricular Activities

Work Experience (Part-time Jobs)

Occupational Choice:

Knowledge of Occupation:

Reason for Choice:

Time of Choice:

Realism rating

| VU | U | SU | SR | R | VR |
|----|---|----|----|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 |

Certainty rating

| VU | U | SU | SC | C | VC |
|----|---|----|----|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 |

Comment: _____

Judge No. _____

APPENDIX I

DIRECTIONS TO THE JUDGES

You are being asked to rate the realism of occupational choices made by grade eleven students, both boys and girls.

Keeping in mind the following definitions, rate each student's occupational choice from 1 to 6:

1. Very unrealistic. The data indicate that the person has chosen an occupation that is inappropriate to his abilities, interests, academic achievement, or other pertinent factors. EITHER the person should consider an occupation at a lower level because the data indicate the probability he will have difficulty securing the necessary training or performing the job duties, OR the person could succeed and would be more satisfied at a higher level occupation, the data indicating that such a person could successfully complete the training and perform the required tasks but would be using his abilities and other factors only minimally.
2. Unrealistic. The data indicate that the person EITHER may have some difficulty completing the training or performing the duties of the occupation because of lack of ability, achievement, or other such factors as are available and pertinent, OR can successfully complete the training and perform the job tasks but there are indications he could succeed at a higher level.
3. Somewhat unrealistic. The data indicate that the person has chosen an occupation inappropriate to a slight majority of the pertinent factors available.
4. Somewhat realistic. The data indicate that the person has chosen an occupation appropriate to only a slight majority of the factors available for consideration.
5. Realistic. Most of the data indicate that this person has chosen an occupation which is commensurate with his background as indicated by the given data. Chances are fairly good that he can complete the training and perform the occupational tasks. This choice appears to be reasonably appropriate to this person.
6. Very Realistic. All evidence indicates that this choice is undoubtedly appropriate to this person. Chances are high that he can successfully complete the training and perform the occupational tasks.

Certainty Rating Scale

There will probably be some persons for whom you find it difficult to make a decision. Nevertheless, a decision must be made. Indicate your indecision on the certainty scale from 1 to 6:

1. VU - Very uncertain
2. U - Uncertain
3. SU - Somewhat uncertain
4. SC - Somewhat certain
5. C - Certain
6. VC - Very certain

In making your ratings, consider all factors which you believe important for the chosen occupation. Please indicate in the "Comment" section the reason(s) for rating a student unrealistic, in one or two words (interests, aptitudes, academic achievement, high school program, etc.)

If you encounter an unfamiliar occupation or one for which you do not know the requirements, please refer to the Dictionary of Occupational Titles, Vol. II.

Information about the Data

Attached is a copy of the questionnaire completed by these students in either November, 1970, or May, 1971. Of particular importance for interpreting the data are the following:

1. Questions 12, 13, 14, 15 and 16 relate to knowledge of occupation chosen. Each person's score on his or her data sheet is the number of these questions they answered accurately.
2. Question 19 relates to reason for choice. The number(s) given on each data sheet can be interpreted by referring to question 19.
3. Question 18 relates to time of choice. Again, you will need to refer to the questionnaire.

Interest, Aptitude, and Intelligence Tests

All tests were administered during the school year 1970 - 1971, in some instances before the questionnaire was completed and in other cases after it was completed.

Academic Record

Grade IX and Grade X marks are the final marks obtained by the students for these grades. Grade XI marks are those obtained in the mid-term examination in February, 1971. Marks given in parentheses are those obtained when a student repeated a subject or grade. When only one mathematics mark appears (rather than a mark for maths A and one for maths B), it can be assumed that this is the general mathematics course.

The Communities

The high schools from which these data were obtained are located at Lewisporte and Clarendville. These communities were considered to be similar in many ways: size, socio-economic level, location, predominant religious affiliation of the members of the community. Both communities are important transportation centres for the areas in which they are located. Both the town population and the school population in each case are drawn largely from the outlying communities.



